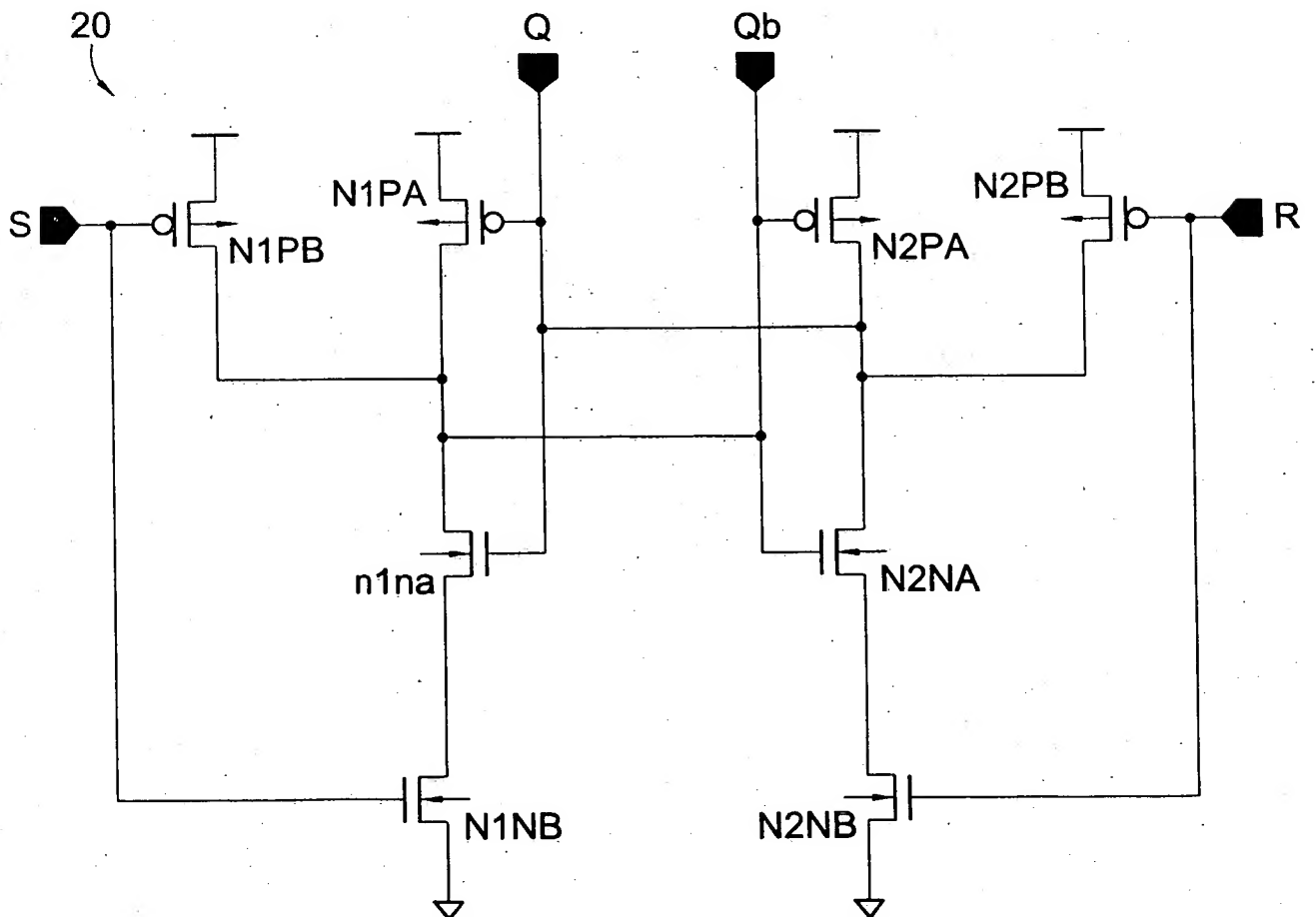
**Fig. 1****Fig. 2**

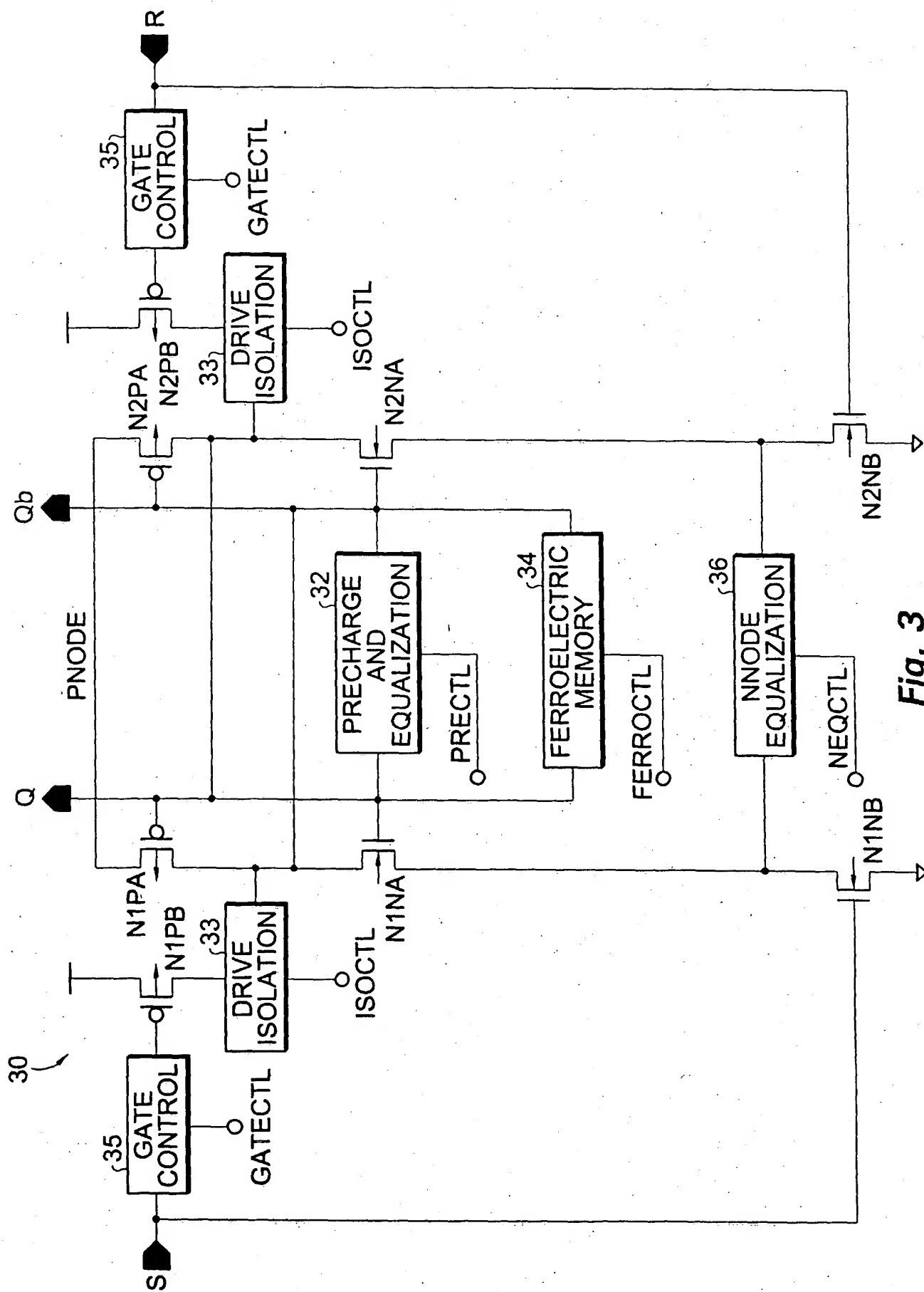
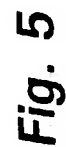


Fig. 3



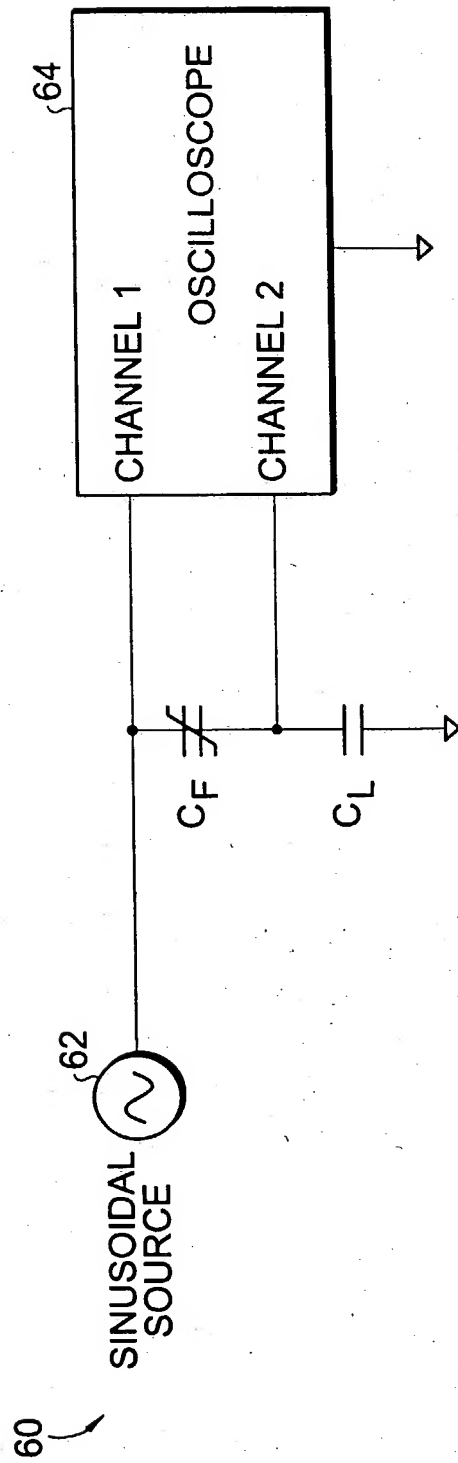
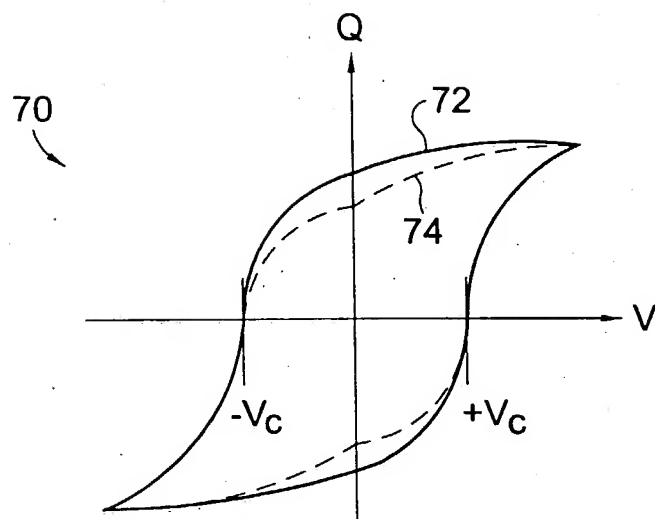
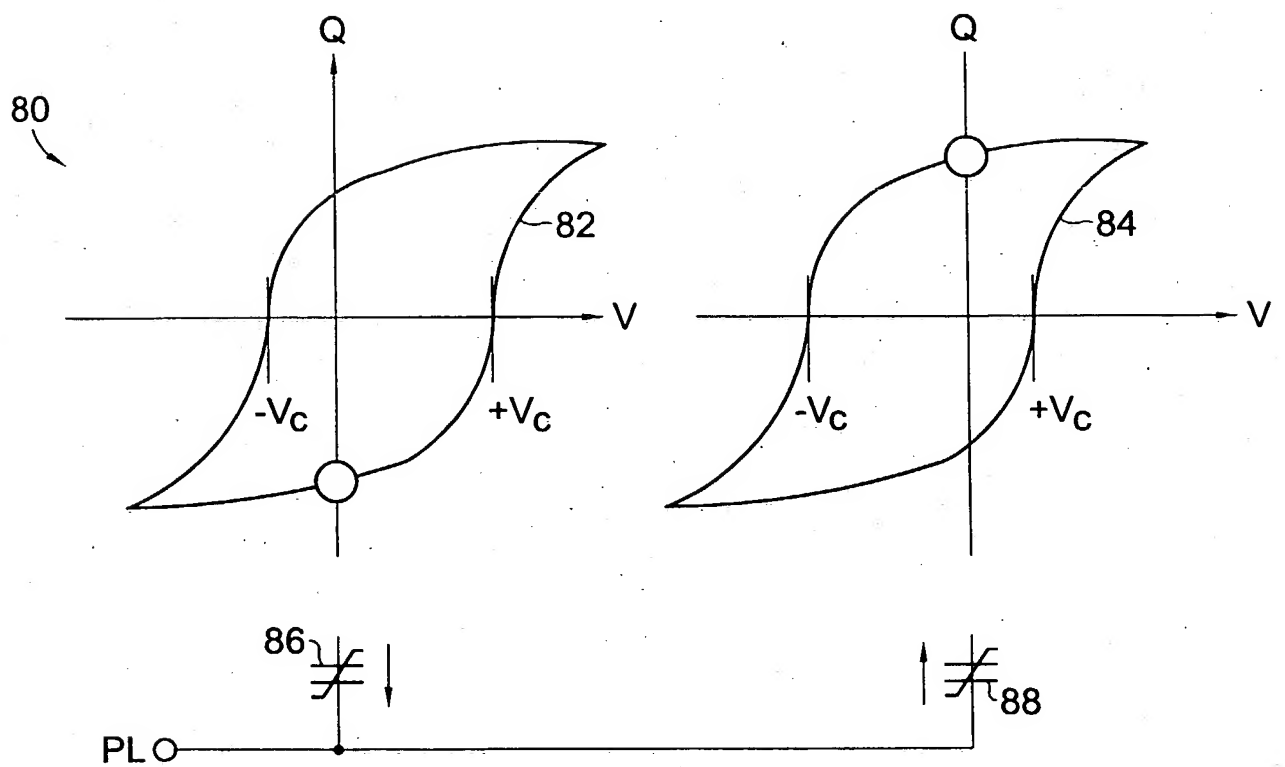
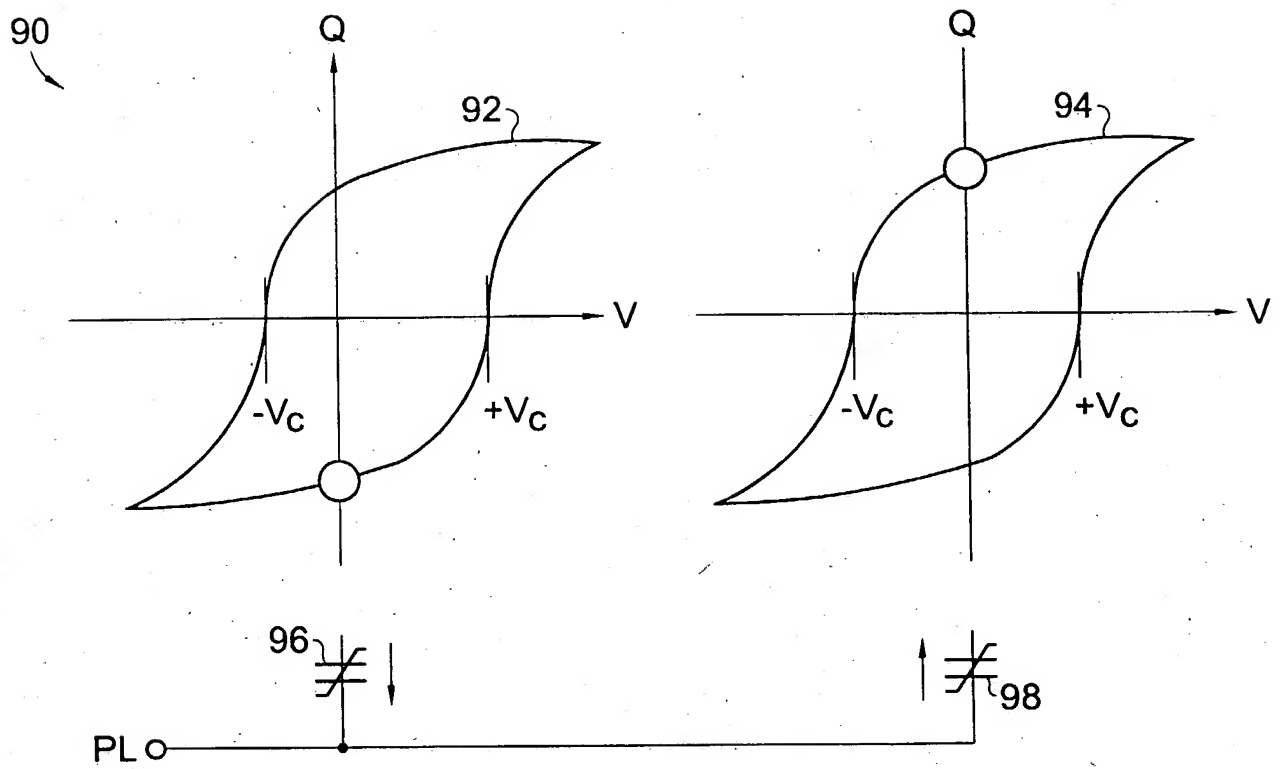


Fig. 6

**Fig. 7****Fig. 8**

**Fig. 9**

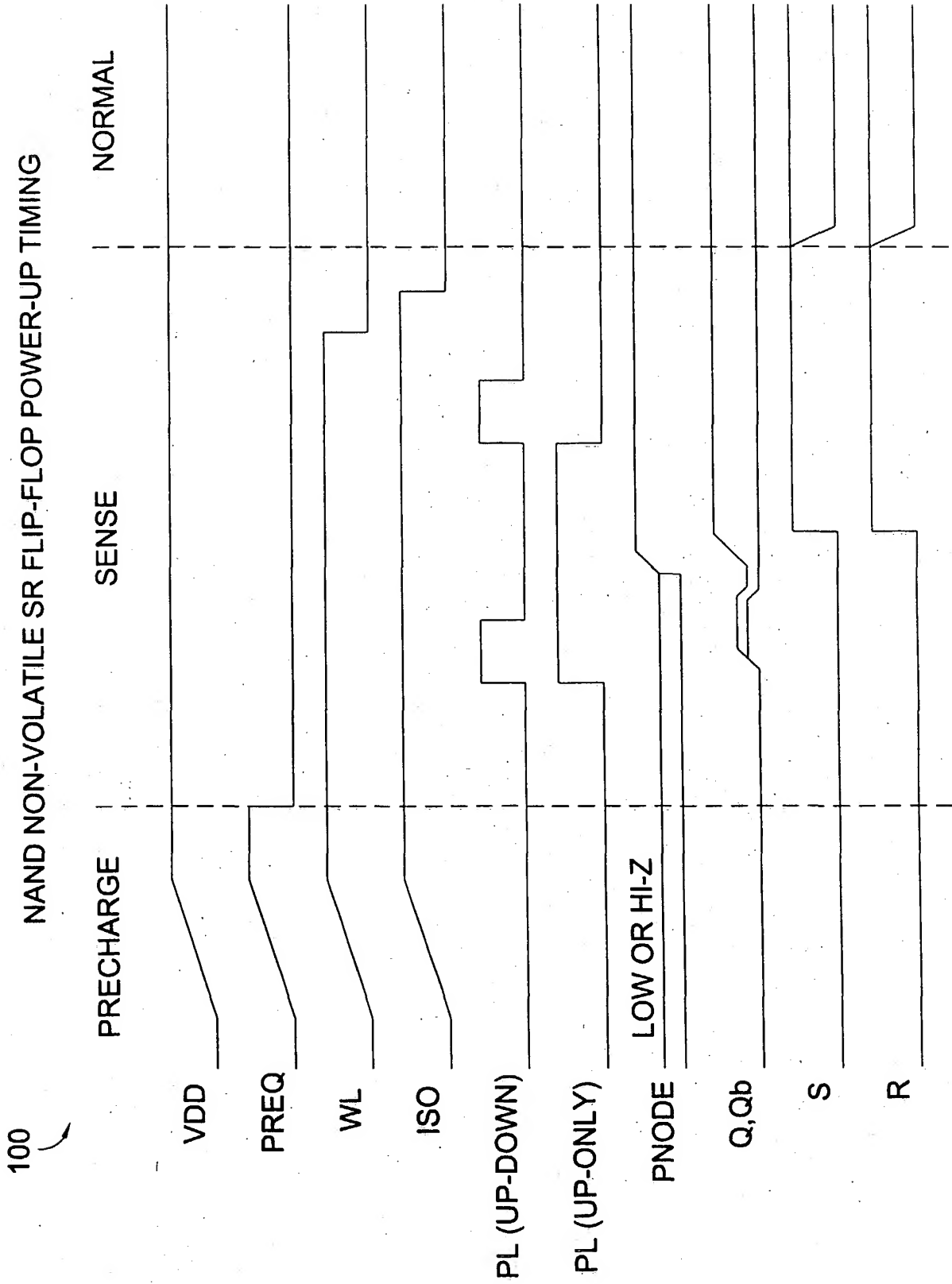


Fig. 10

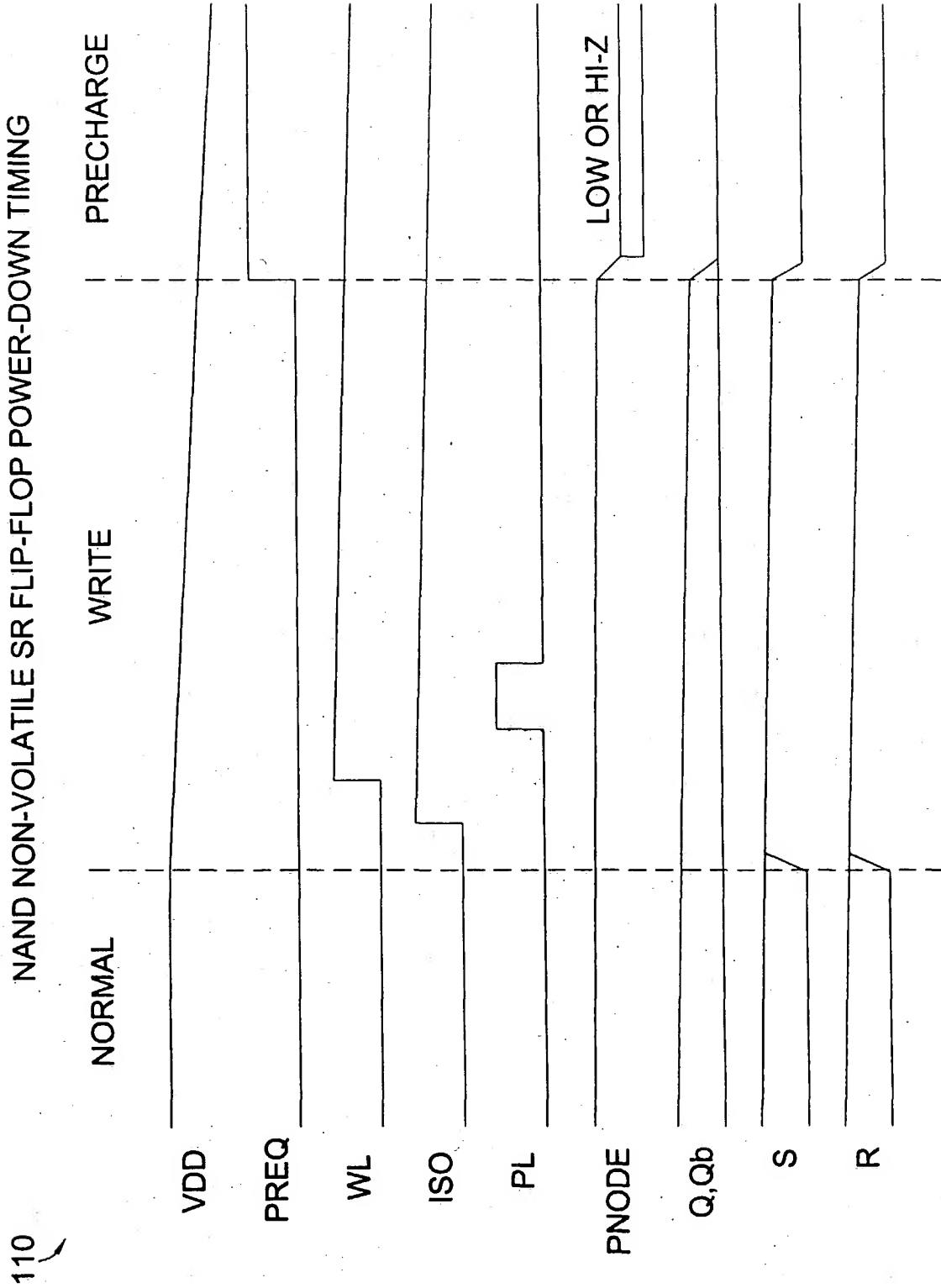


Fig. 11



Fig. 12A

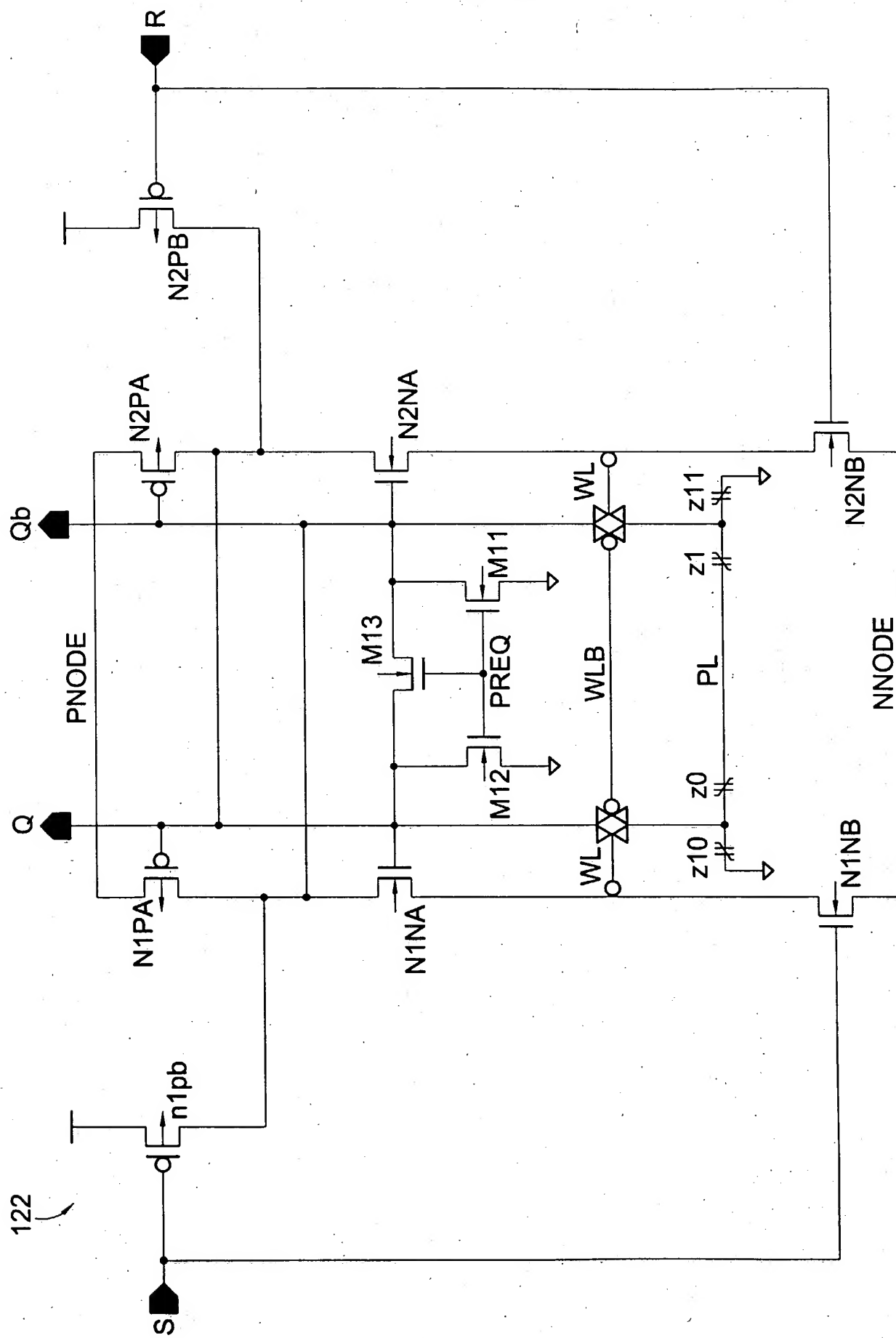


Fig. 12B

NAND NON-VOLATILE SR FLIP-FLOP POWER-UP TIMING

124

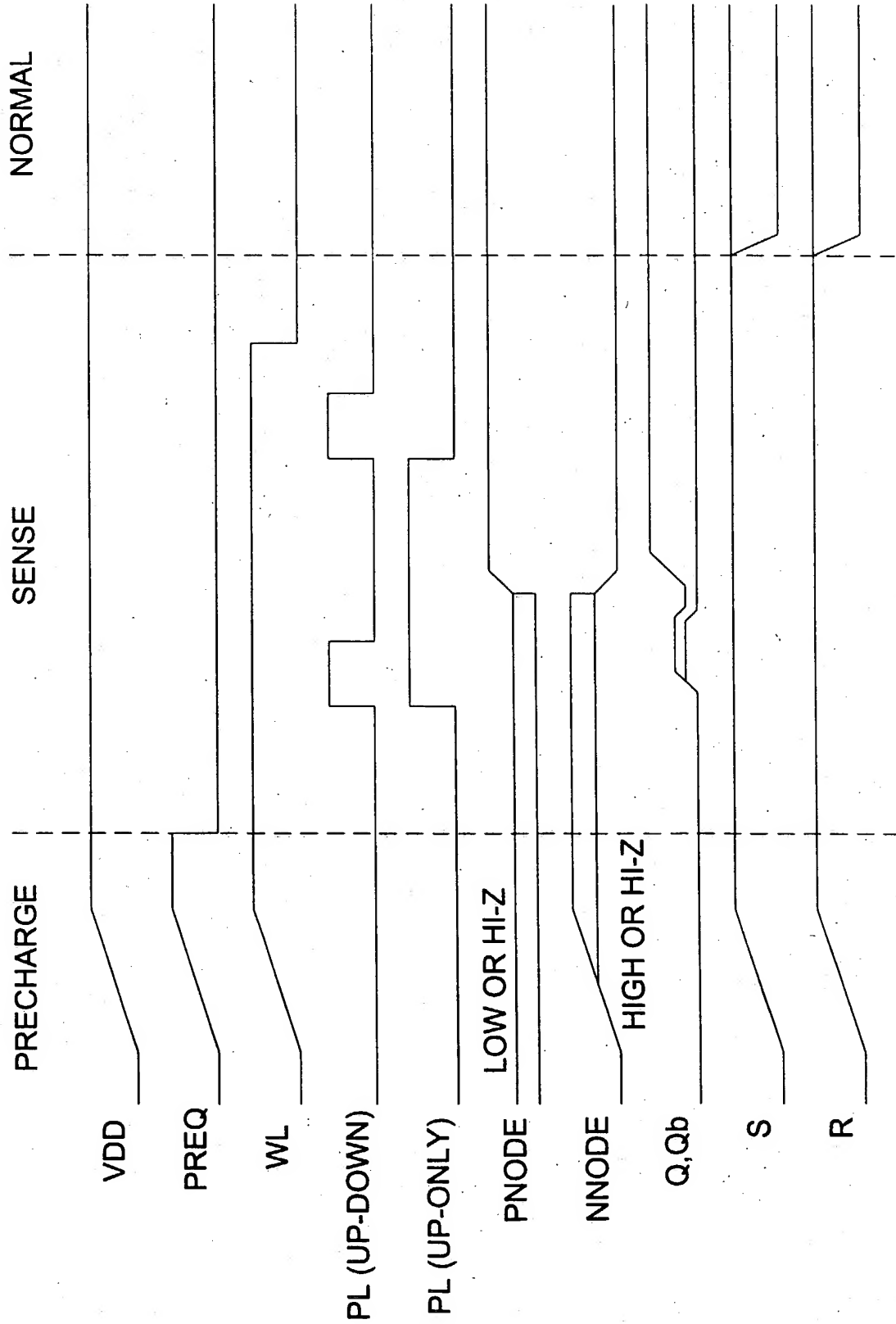
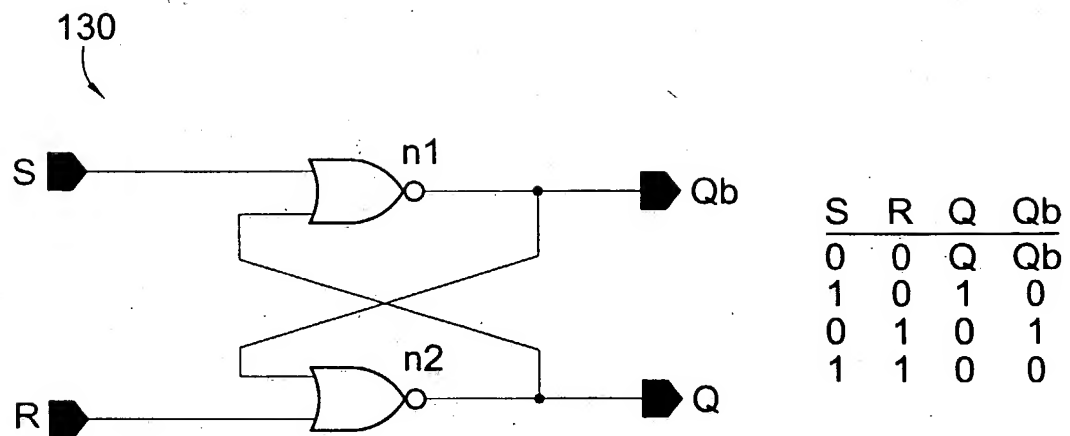
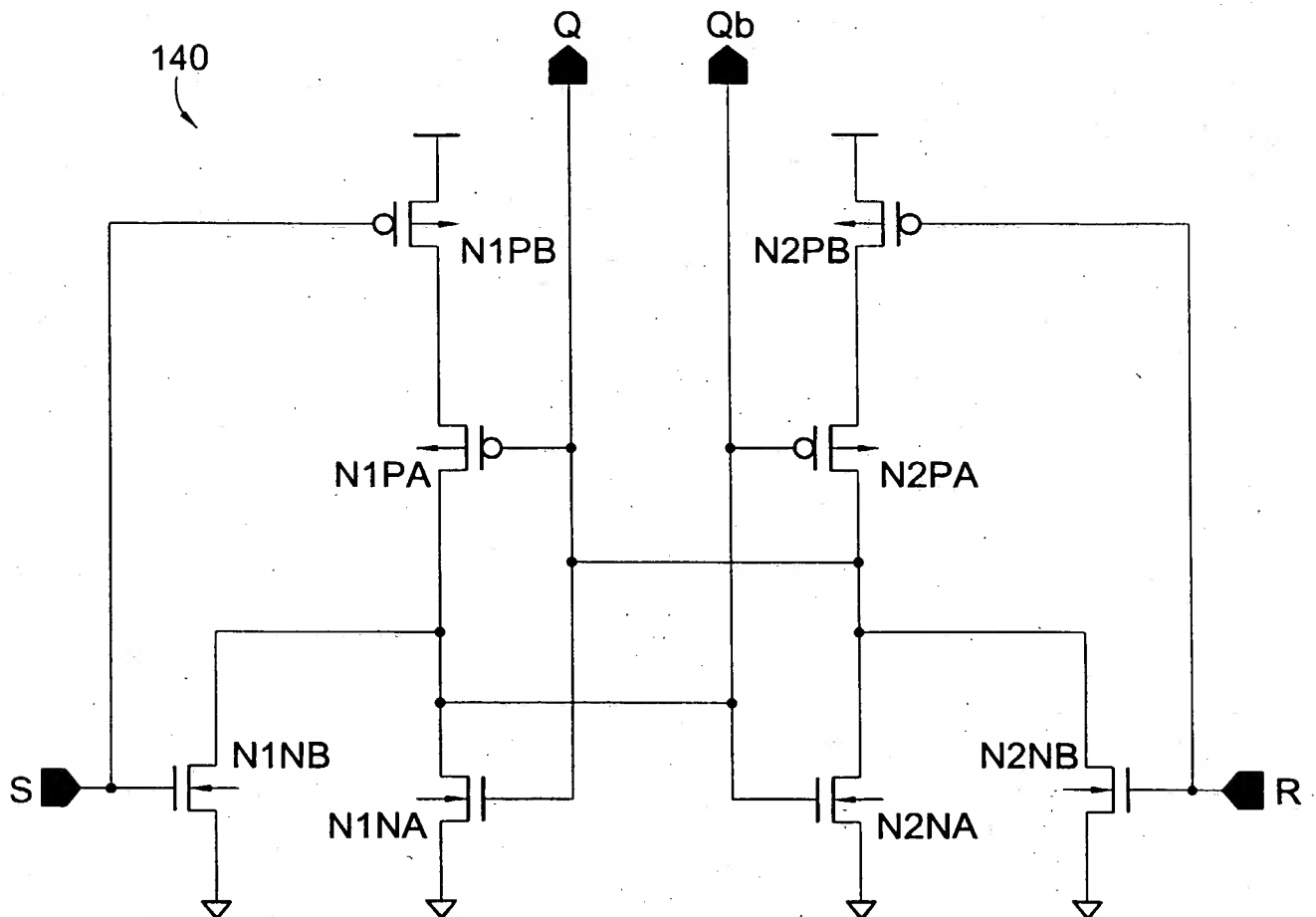


Fig. 12C

**Fig. 13****Fig. 14**

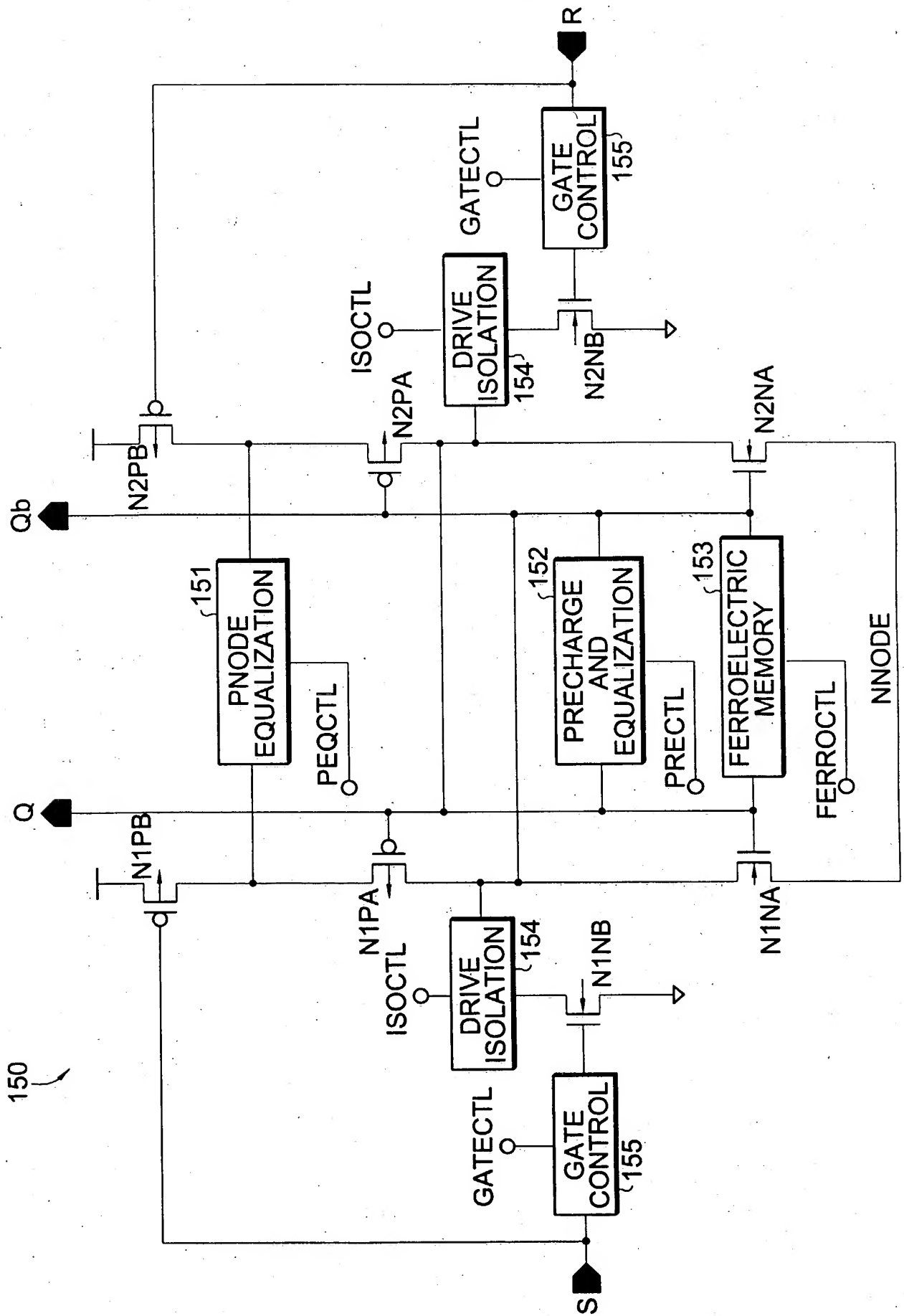


Fig. 15

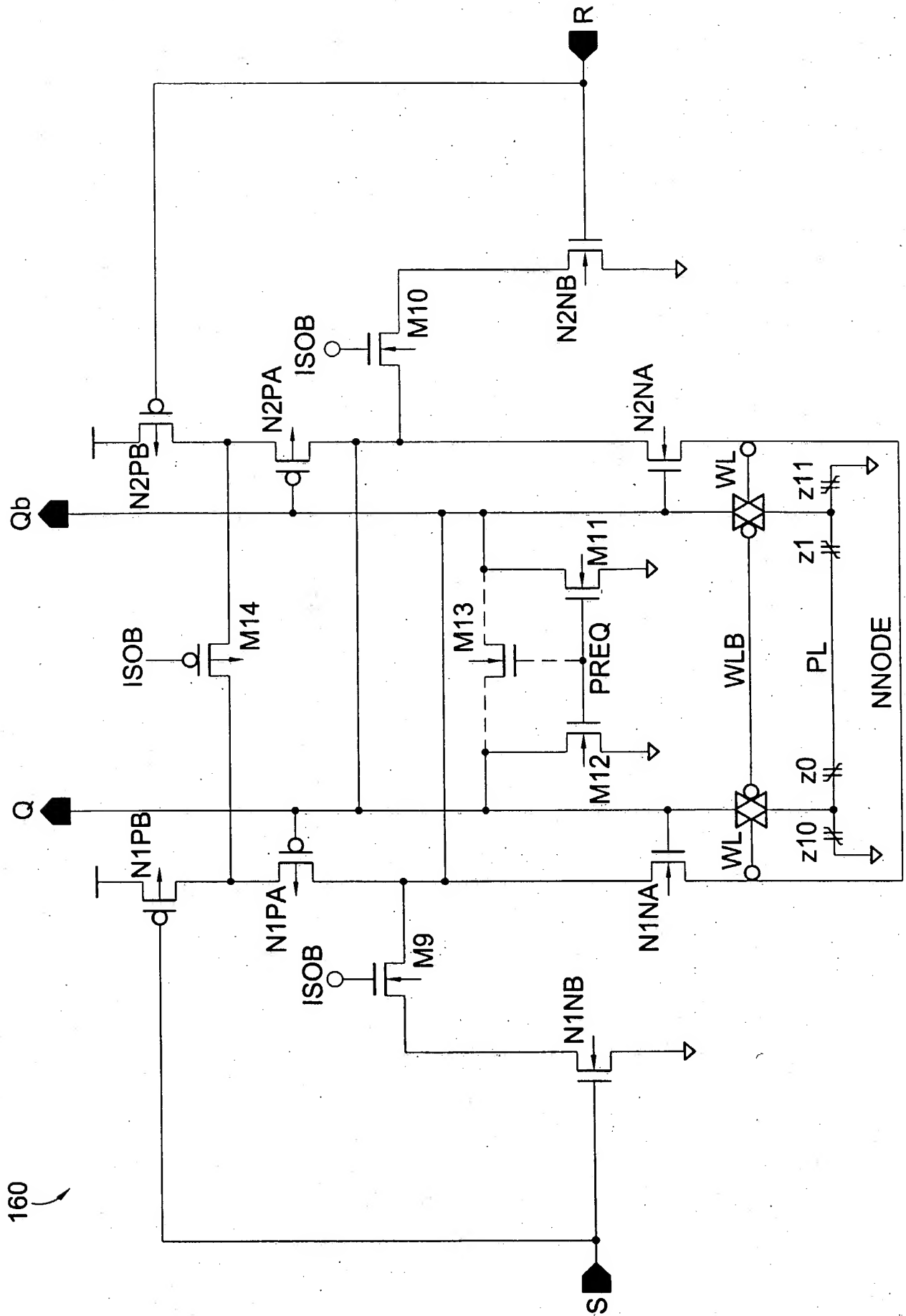
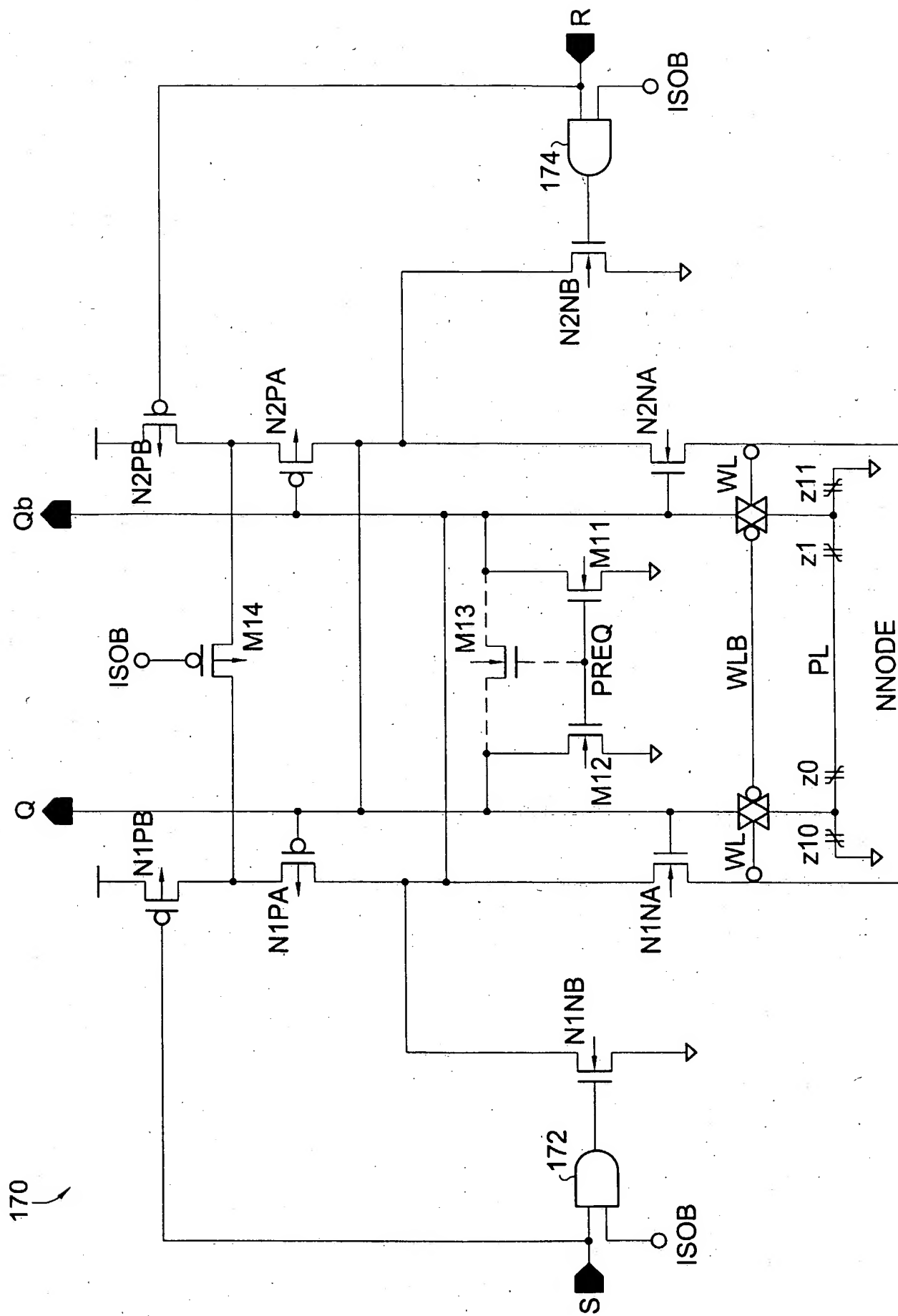


Fig. 16



180
NOR NON-VOLATILE SR FLIP-FLOP POWER-UP TIMING

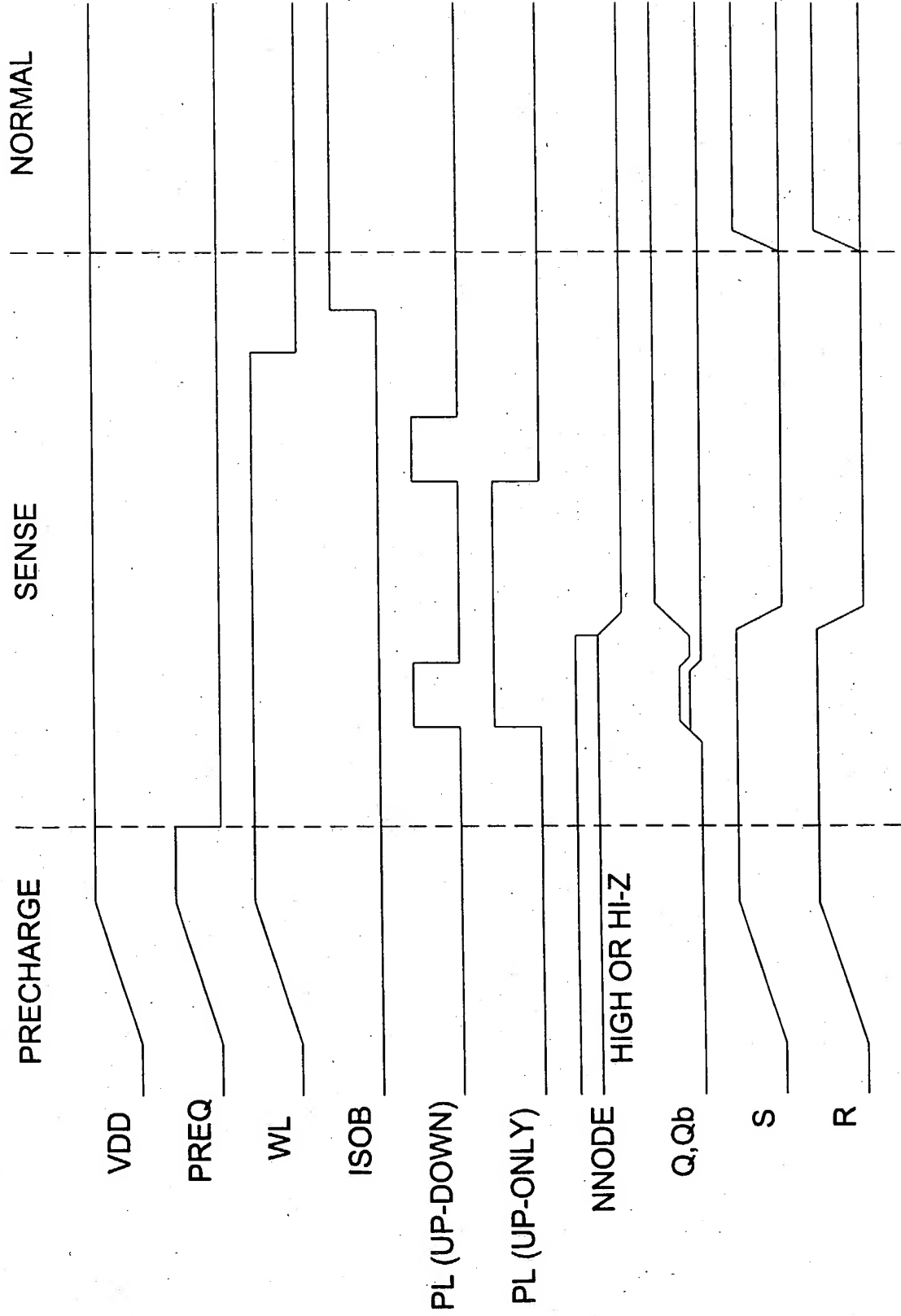


Fig. 18

190

NOR NON-VOLATILE SR FLIP-FLOP POWER-DOWN TIMING

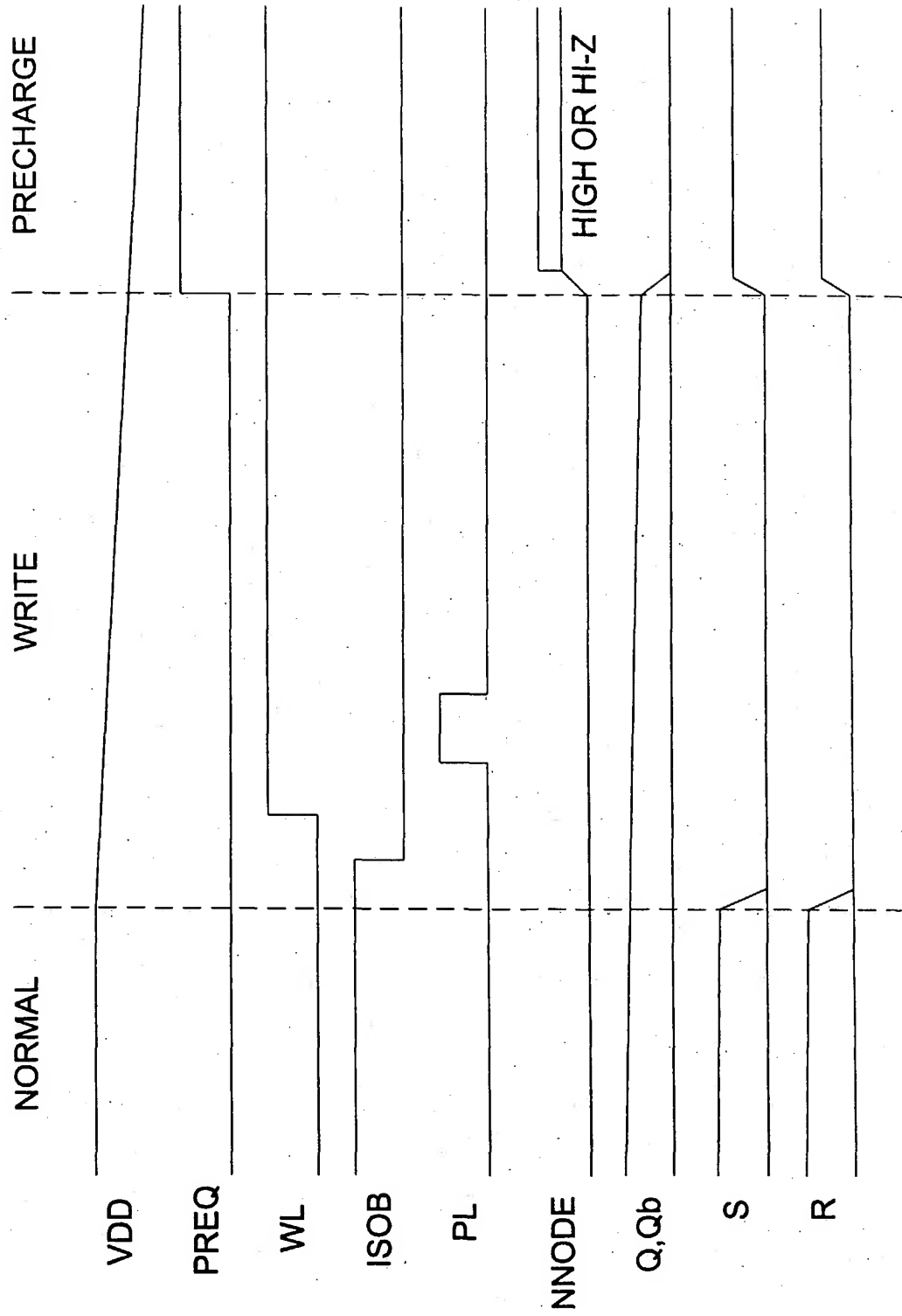


Fig. 19

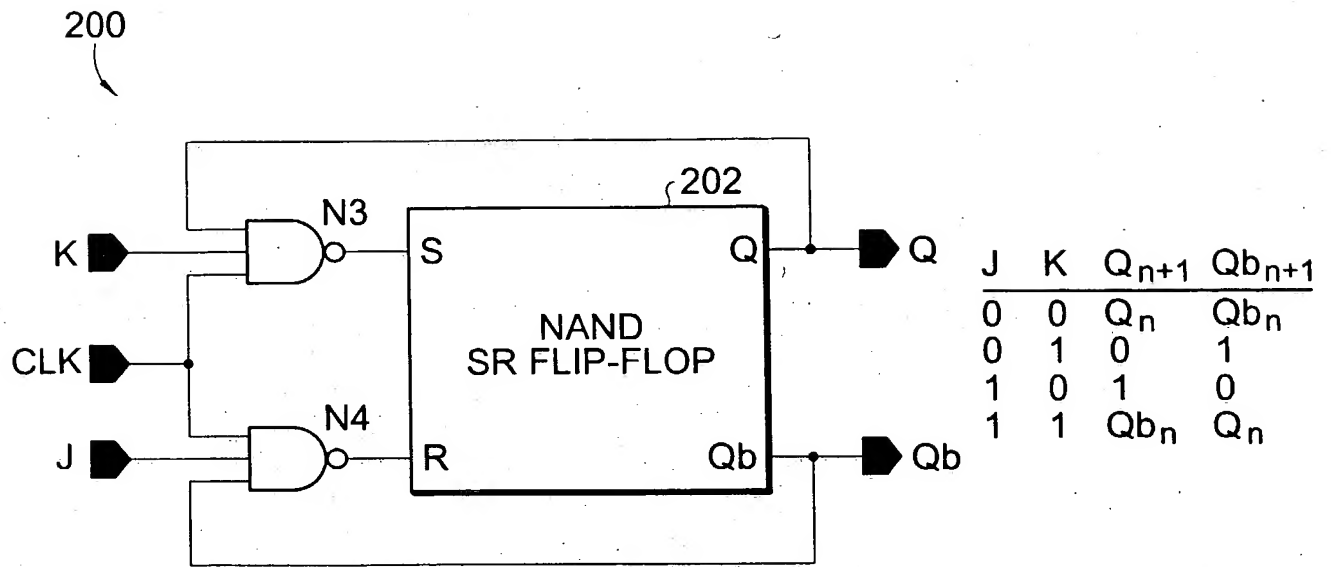


Fig. 20

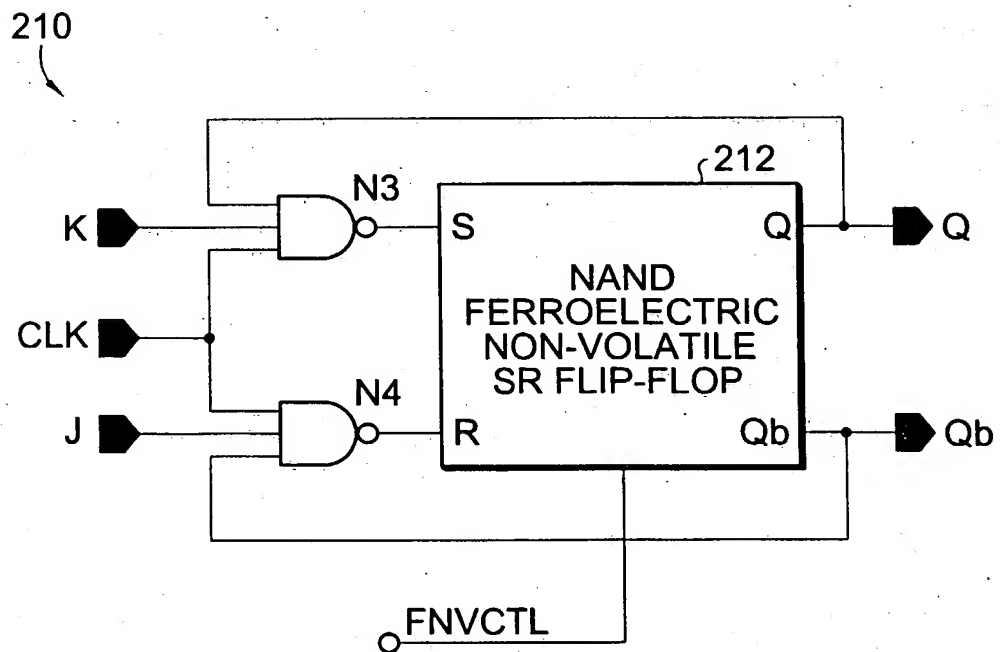


Fig. 21

NAND NON-VOLATILE JK FLIP-FLOP POWER-UP TIMING

220

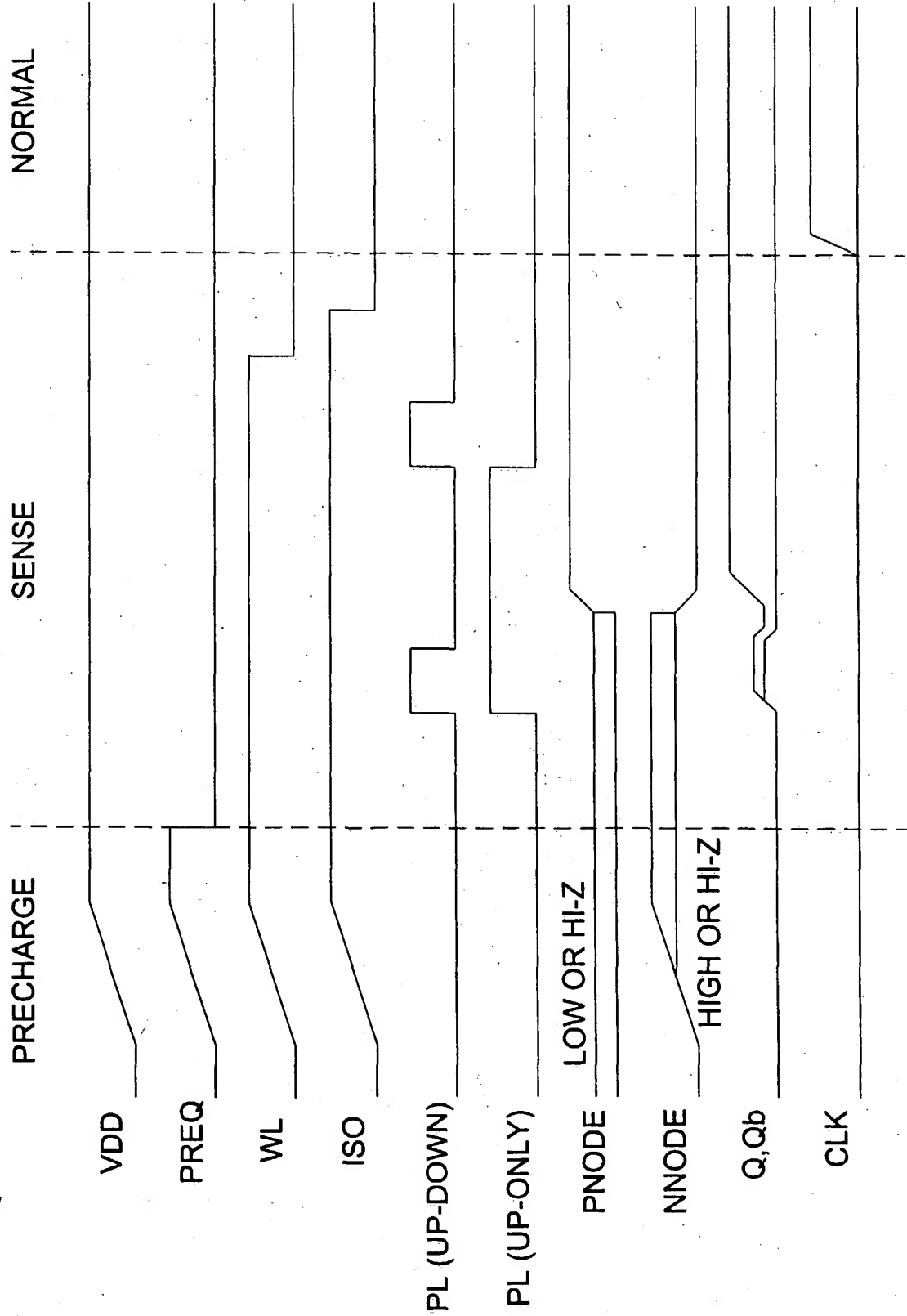


Fig. 22

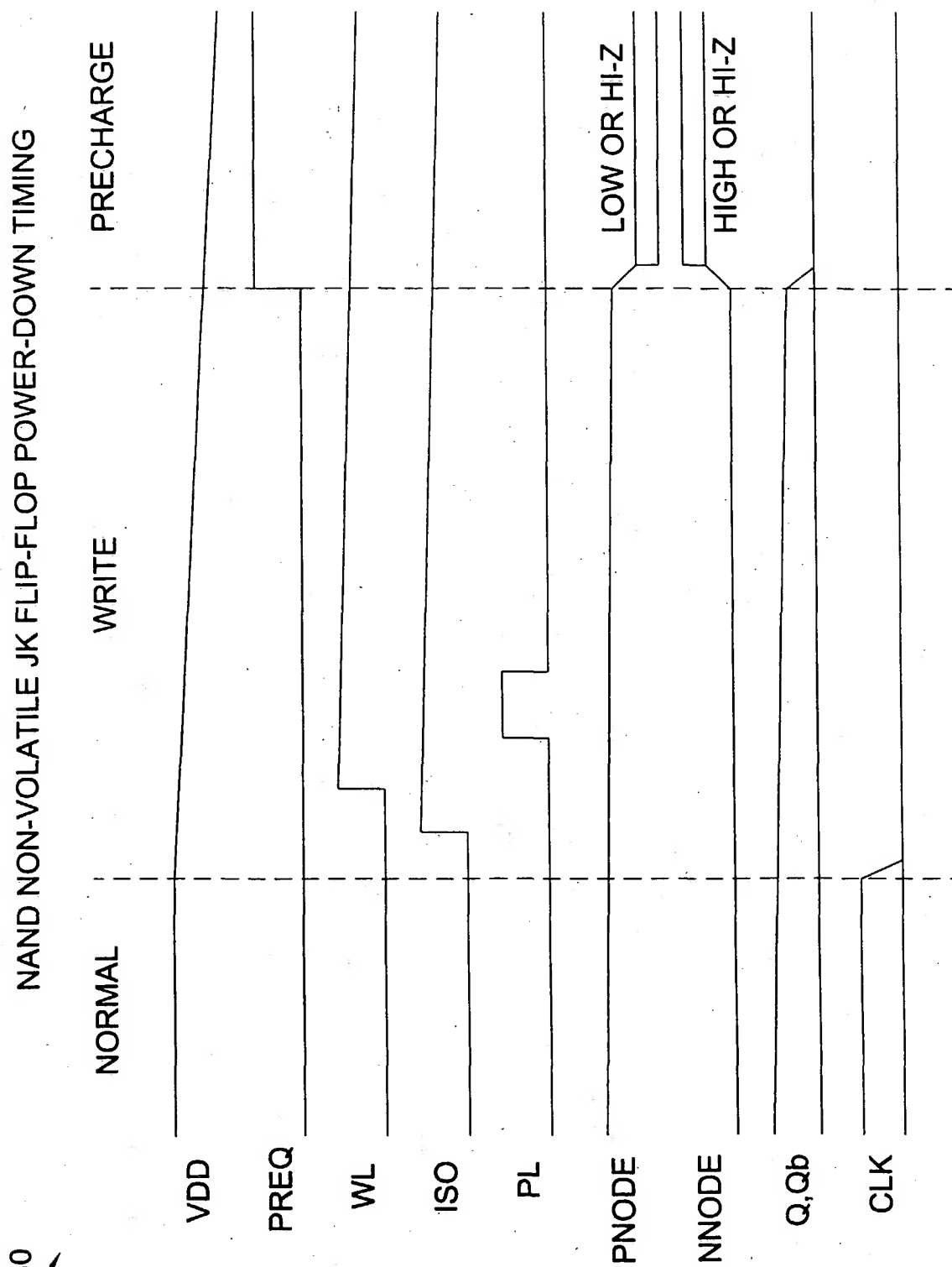
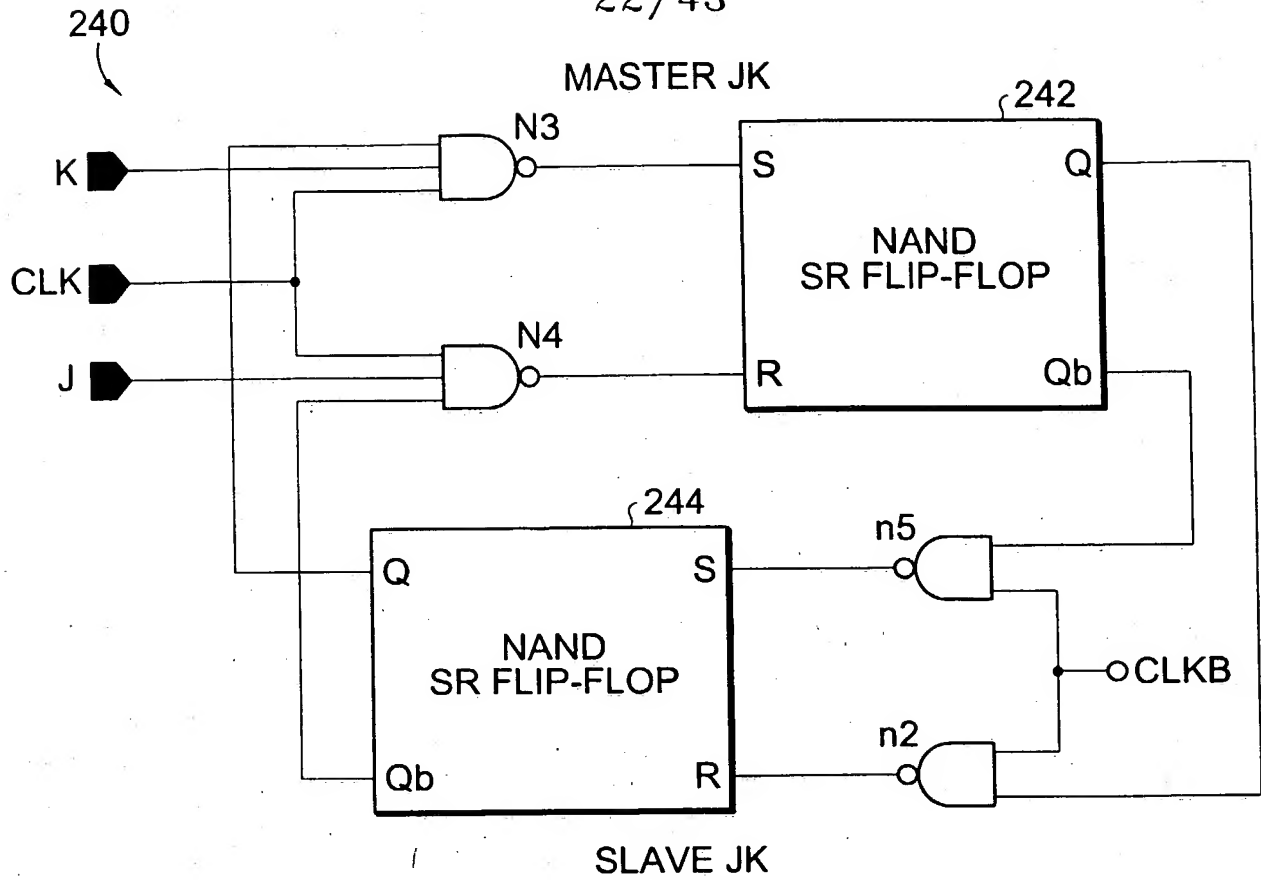
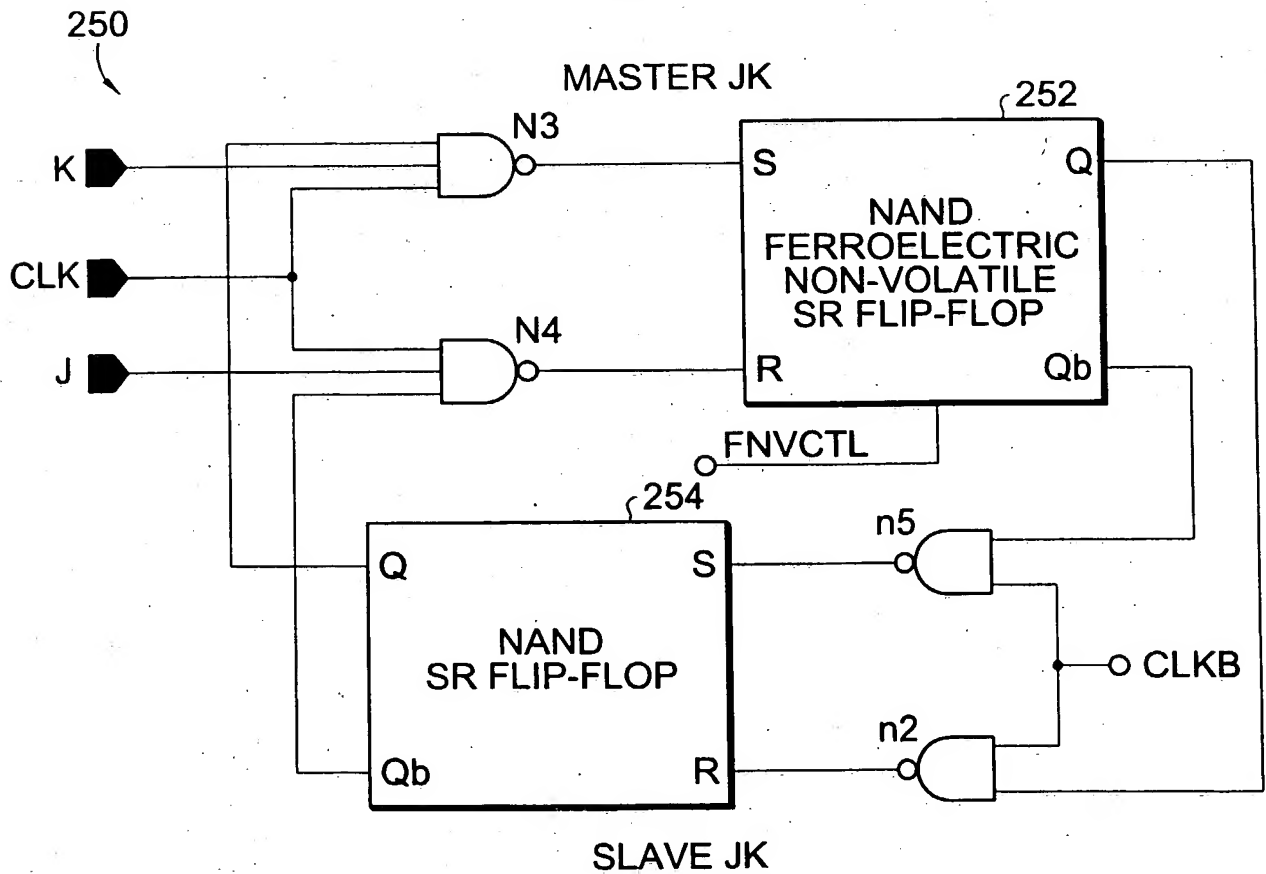
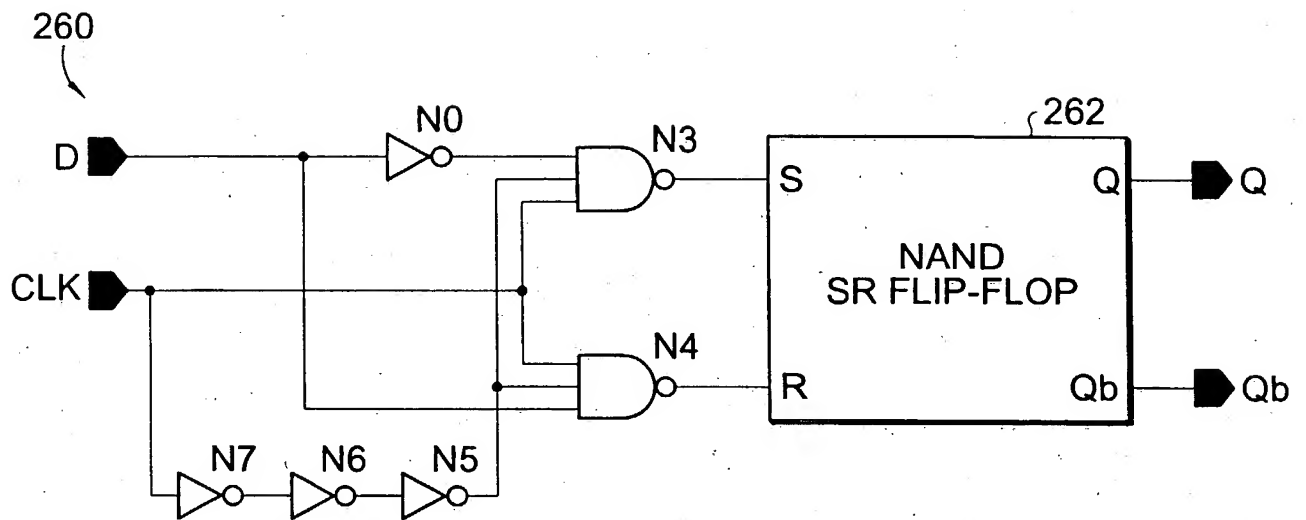
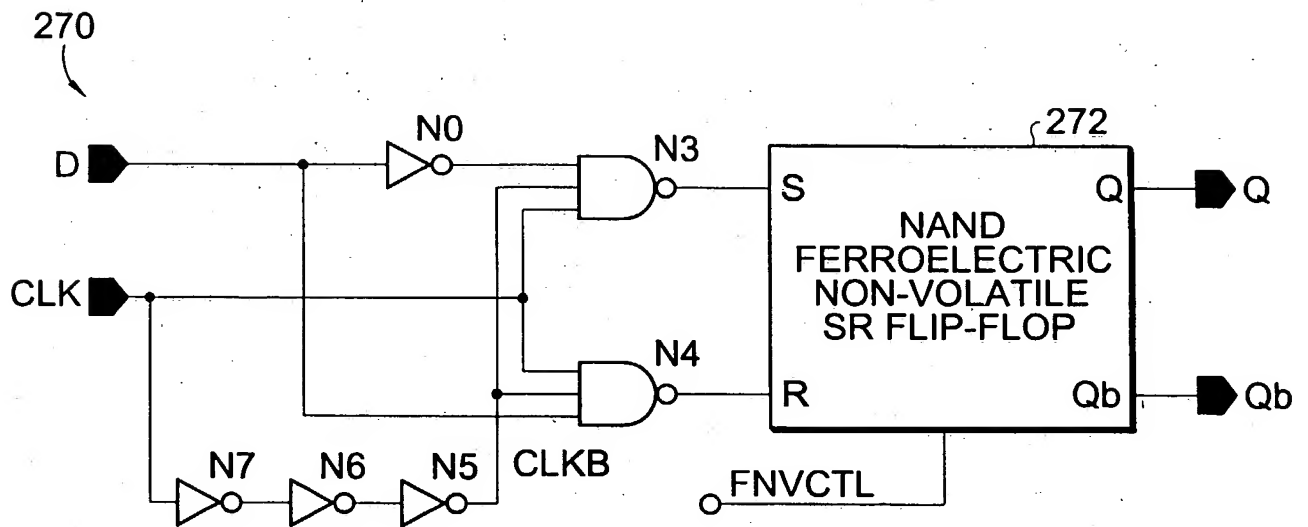


Fig. 23

**Fig. 24****Fia. 25**

**Fig. 26****Fig. 27**

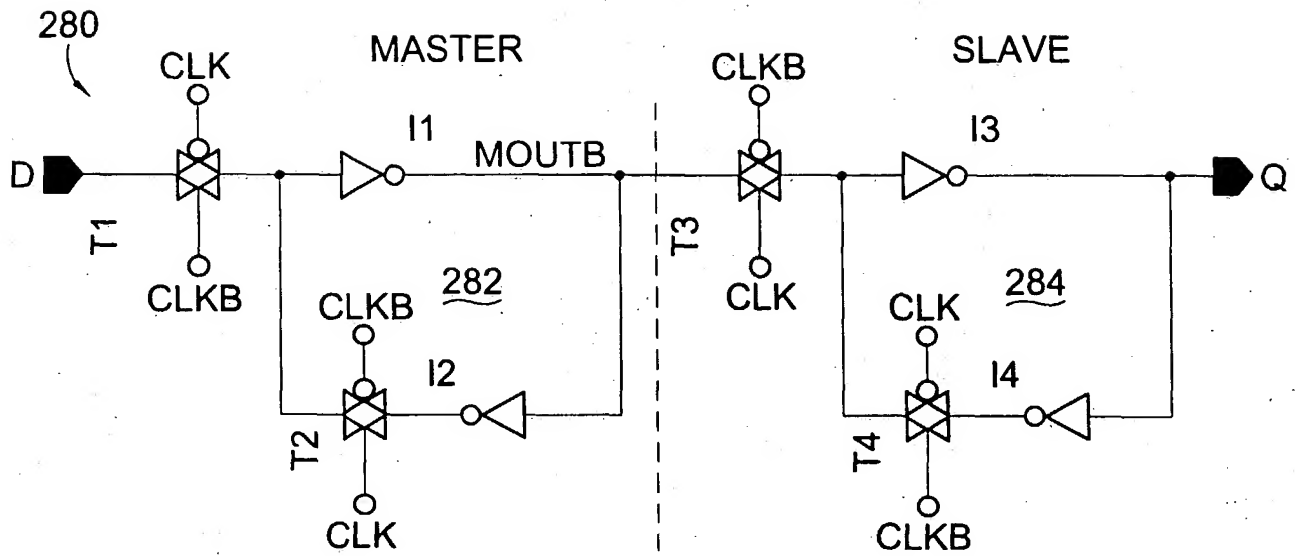


Fig. 28

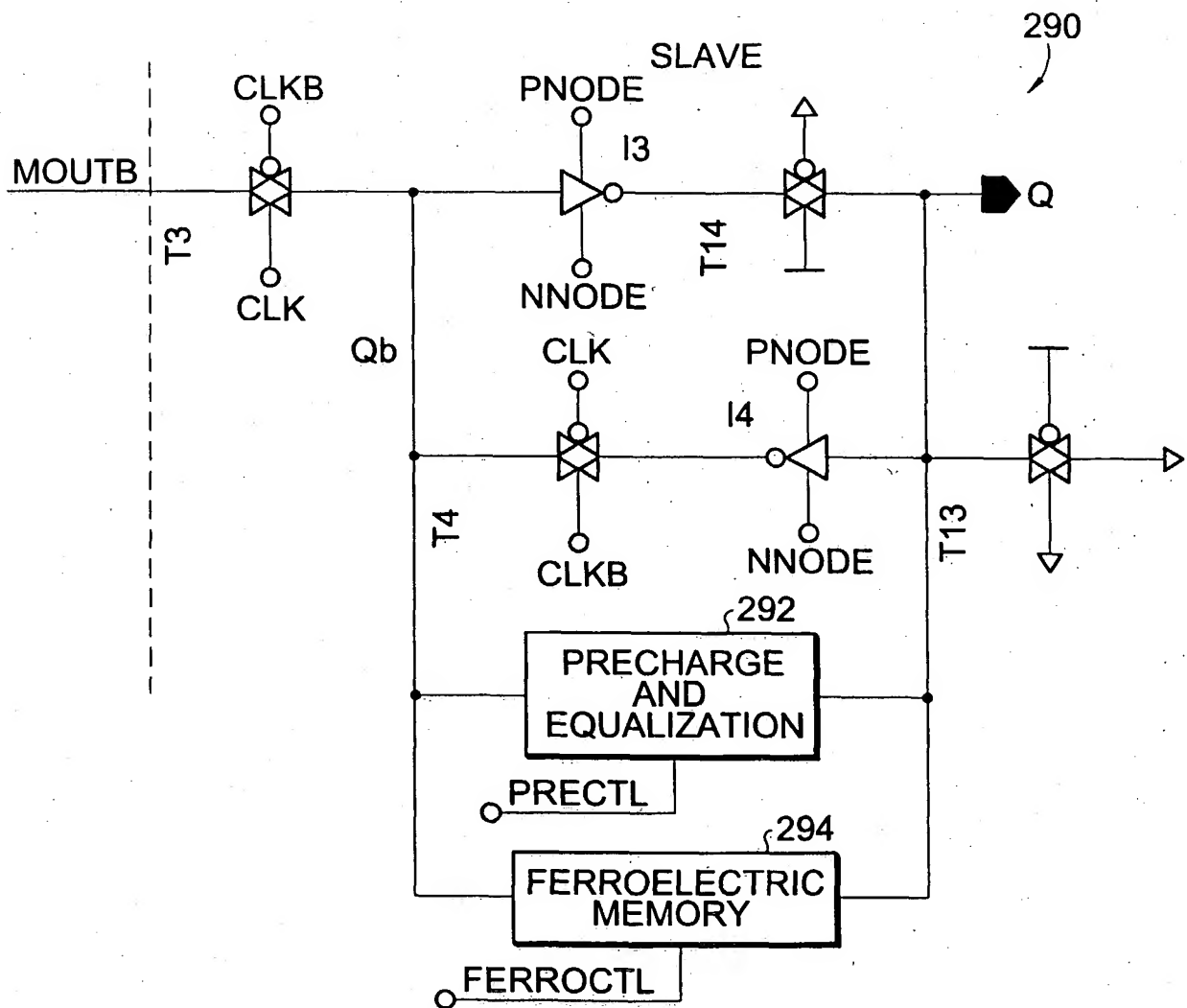


Fig. 29A



TRANSMISSION GATE BASED NON-VOLATILE D FLIP-FLOP POWER-UP TIMING NON-VOLATILE SLAVE

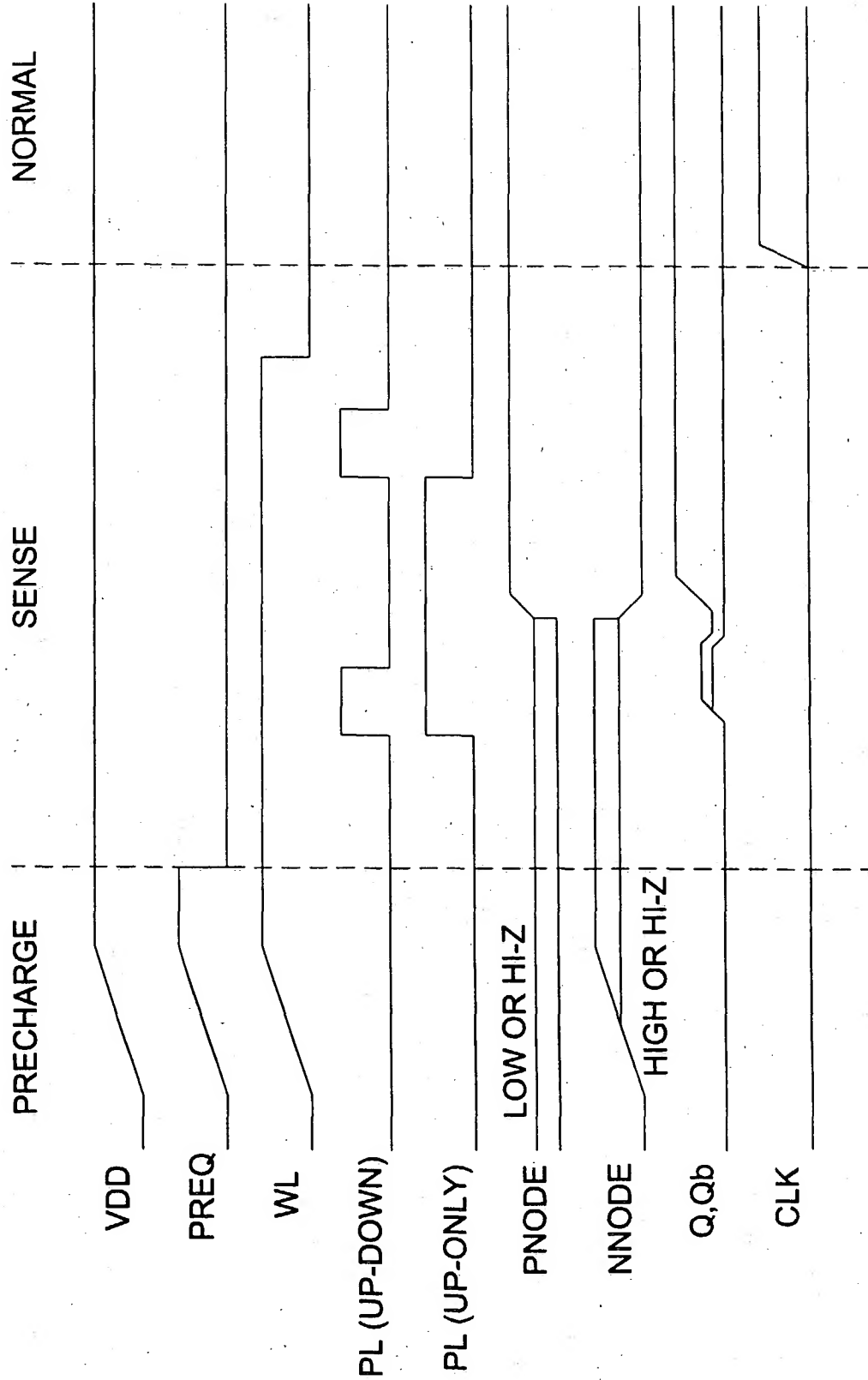


Fig. 30A

310

TRANSMISSION GATE BASED NON-VOLATILE D FLIP-FLOP POWER-DOWN TIMING

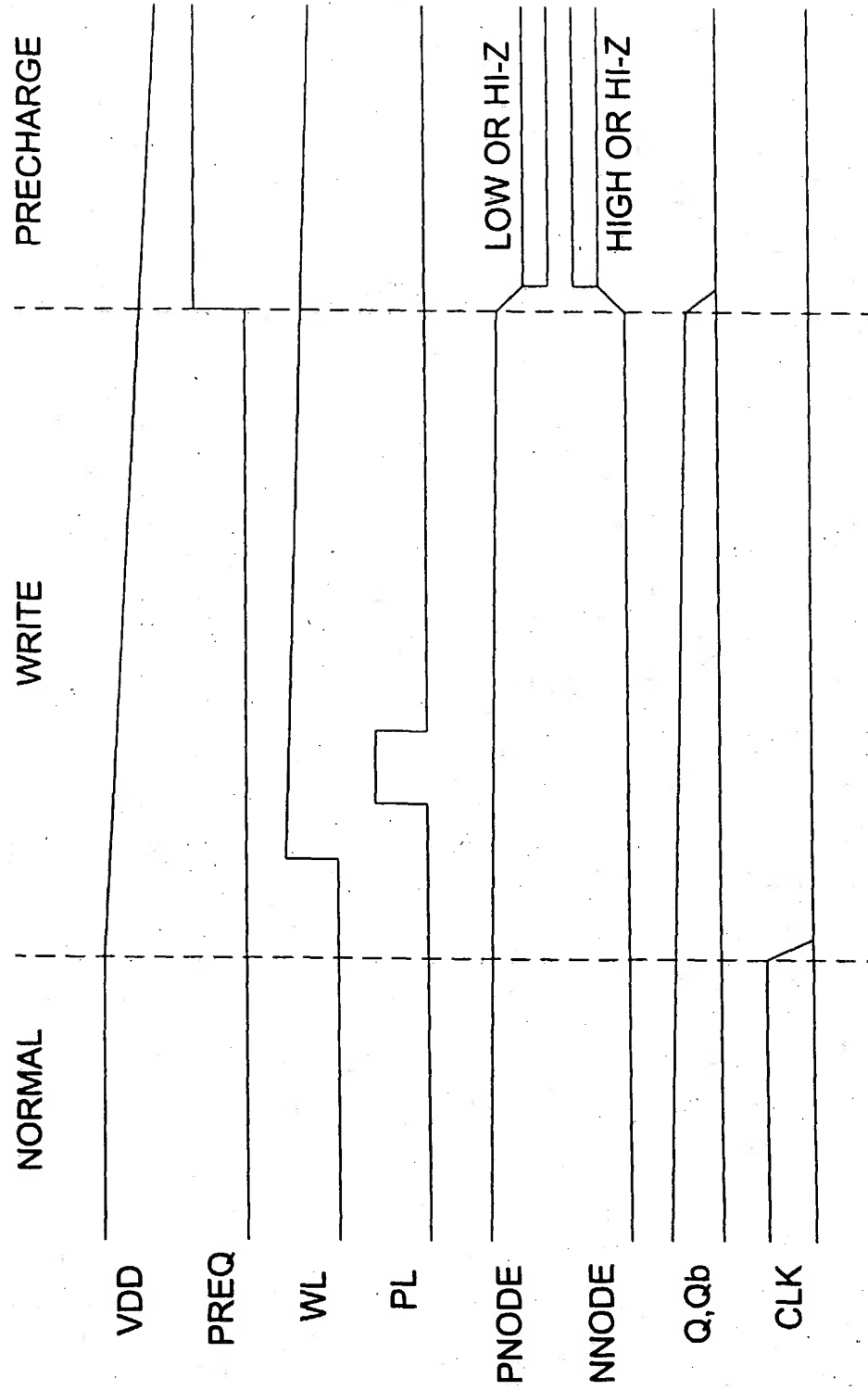


Fig. 31A

TRANSMISSION GATE BASED NON-VOLATILE D FLIP-FLOP POWER-UP TIMING

300'

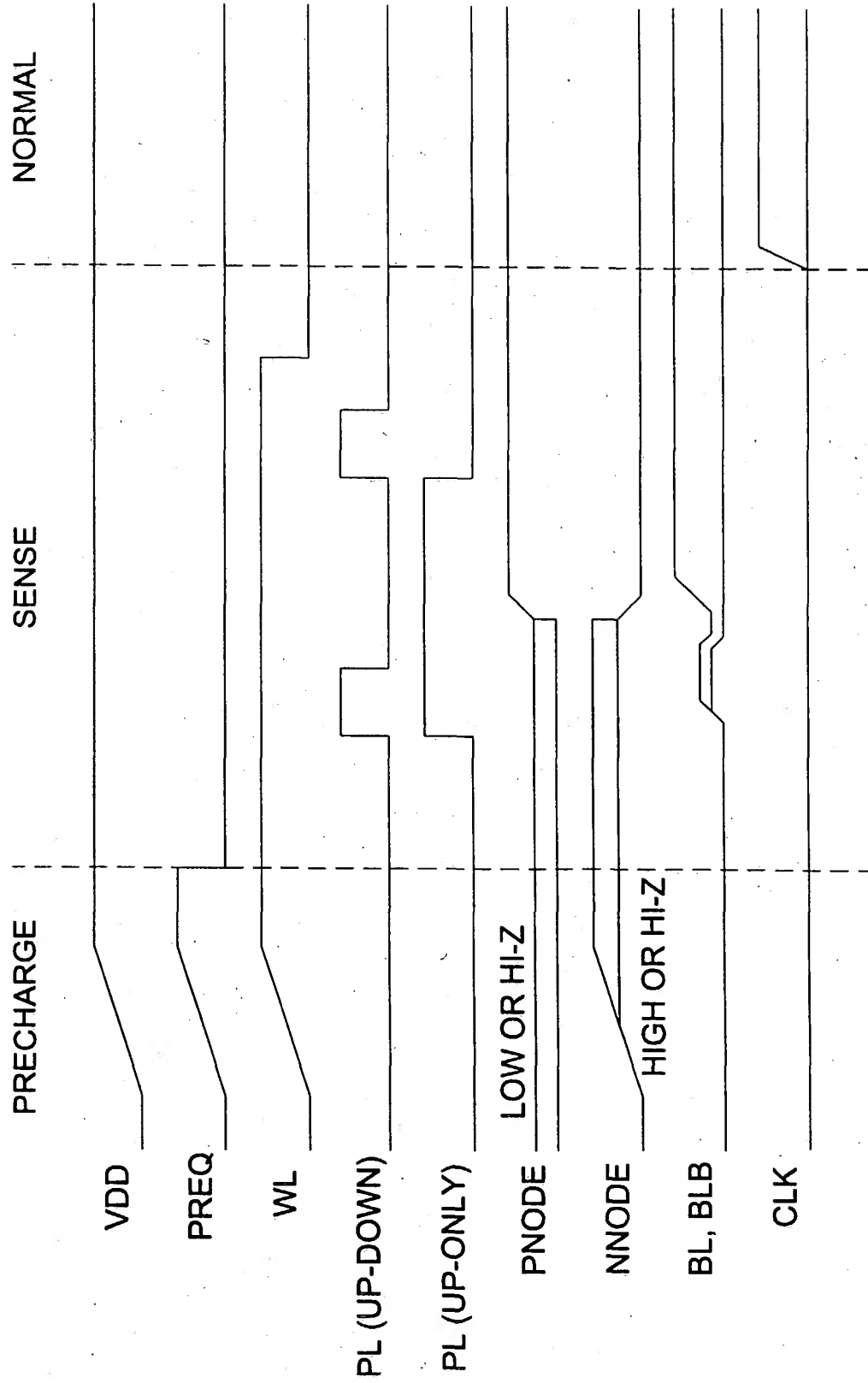


Fig. 30B

310'

TRANSMISSION GATE BASED NON-VOLATILE D FLIP-FLOP POWER-DOWN TIMING

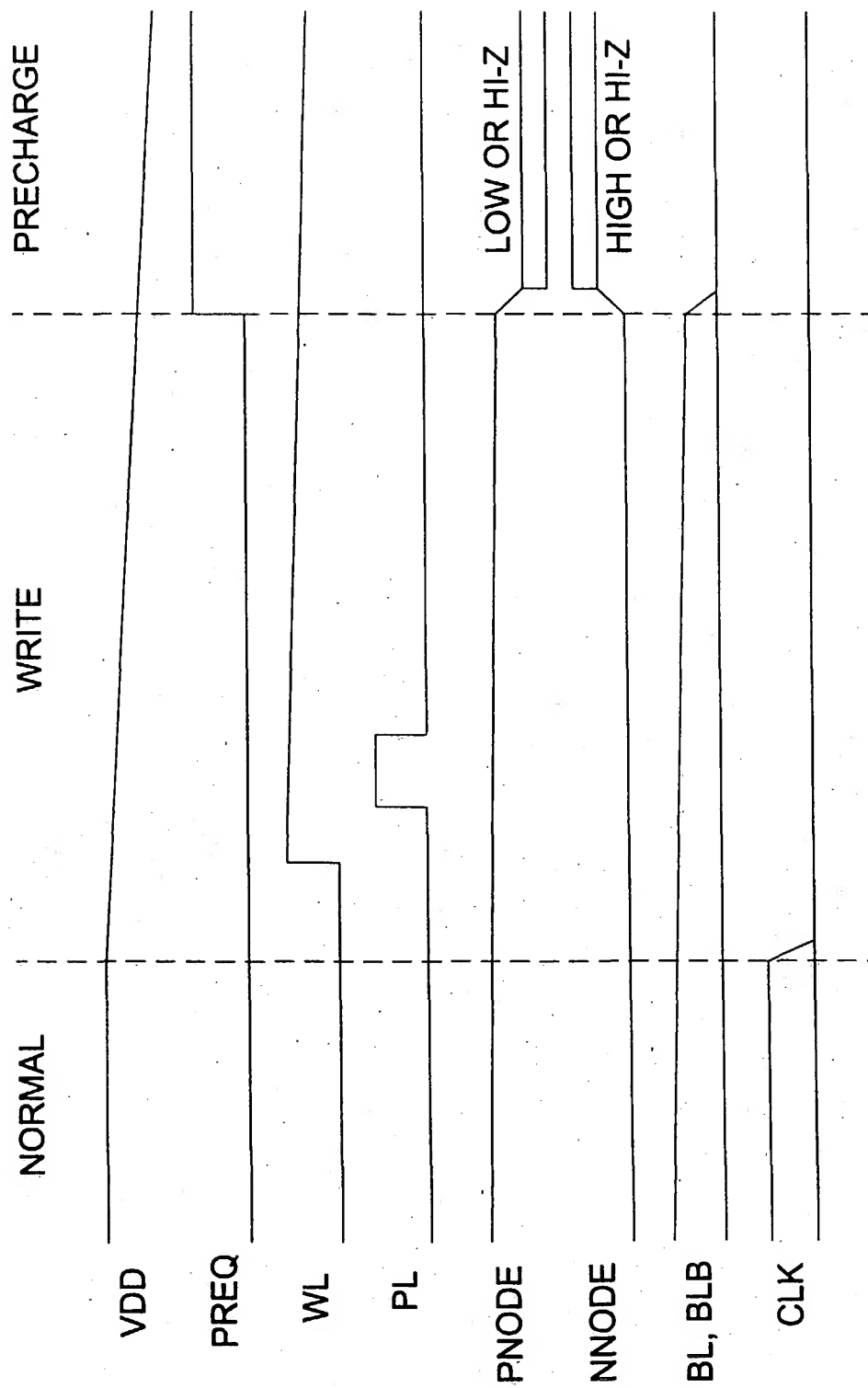


Fig. 31B

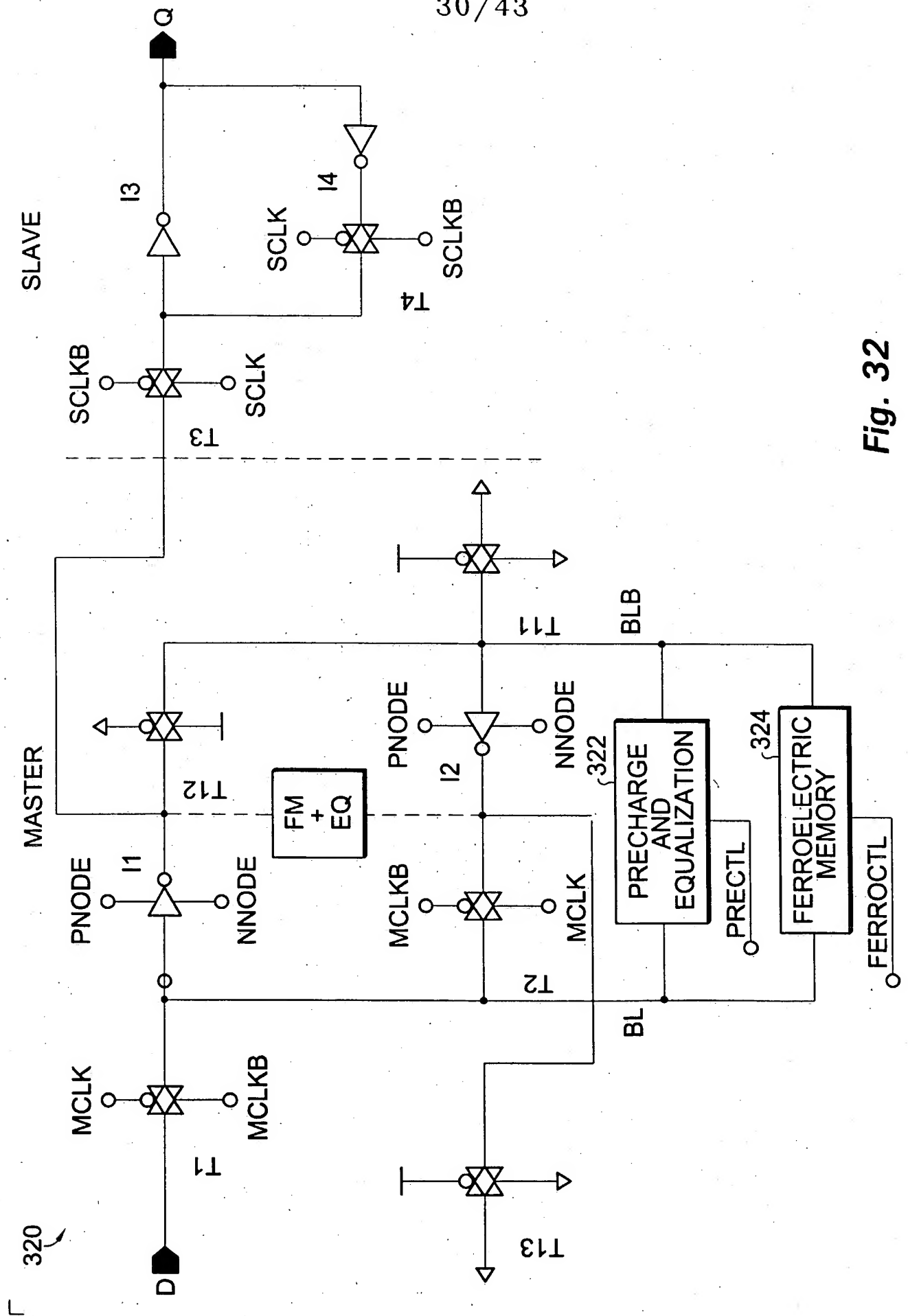


Fig. 32

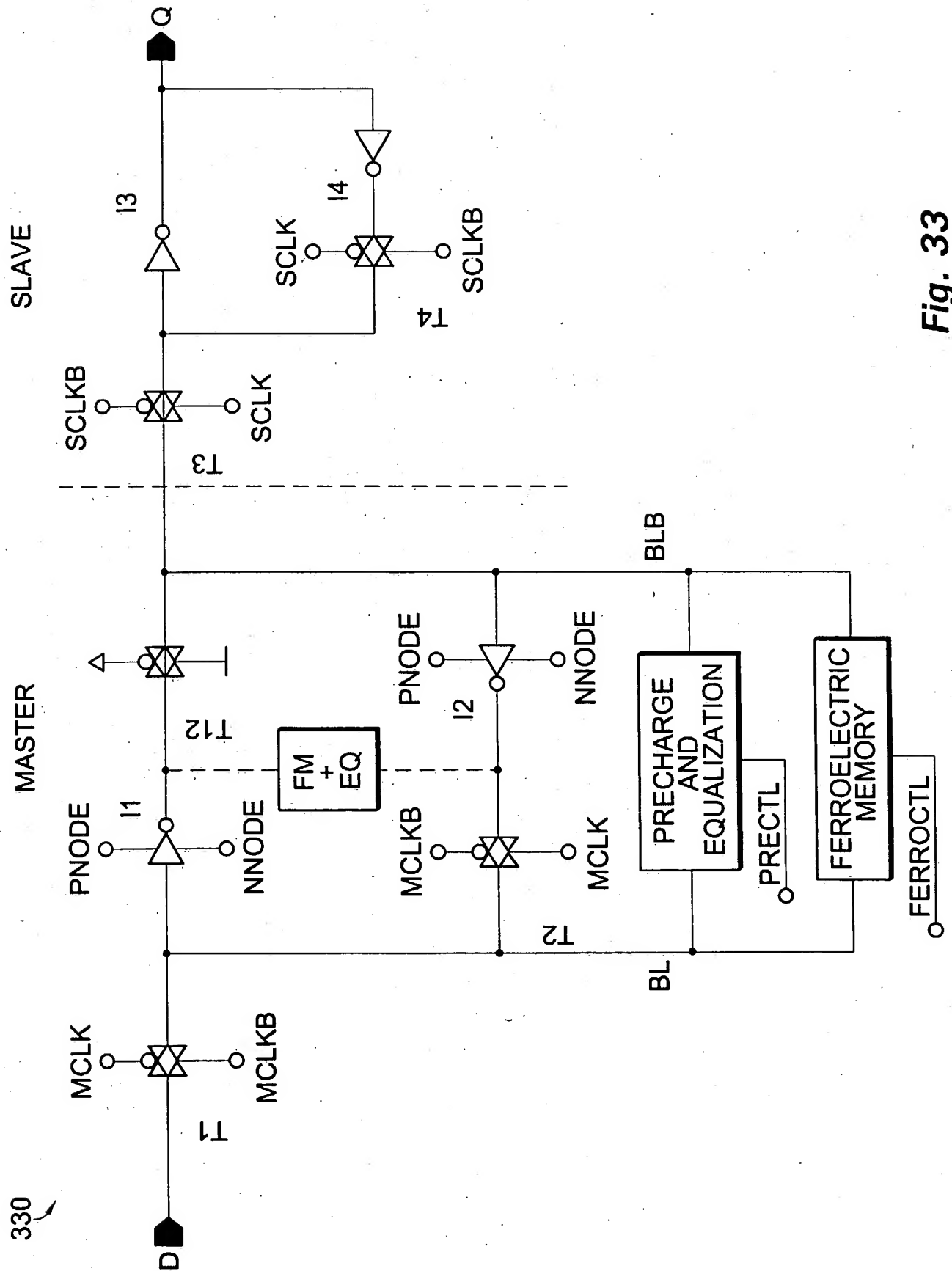


Fig. 33

340 TRANSMISSION GATE BASED NON-VOLATILE D FLIP-FLOP POWER-UP TIMING
NON-VOLATILE MASTER

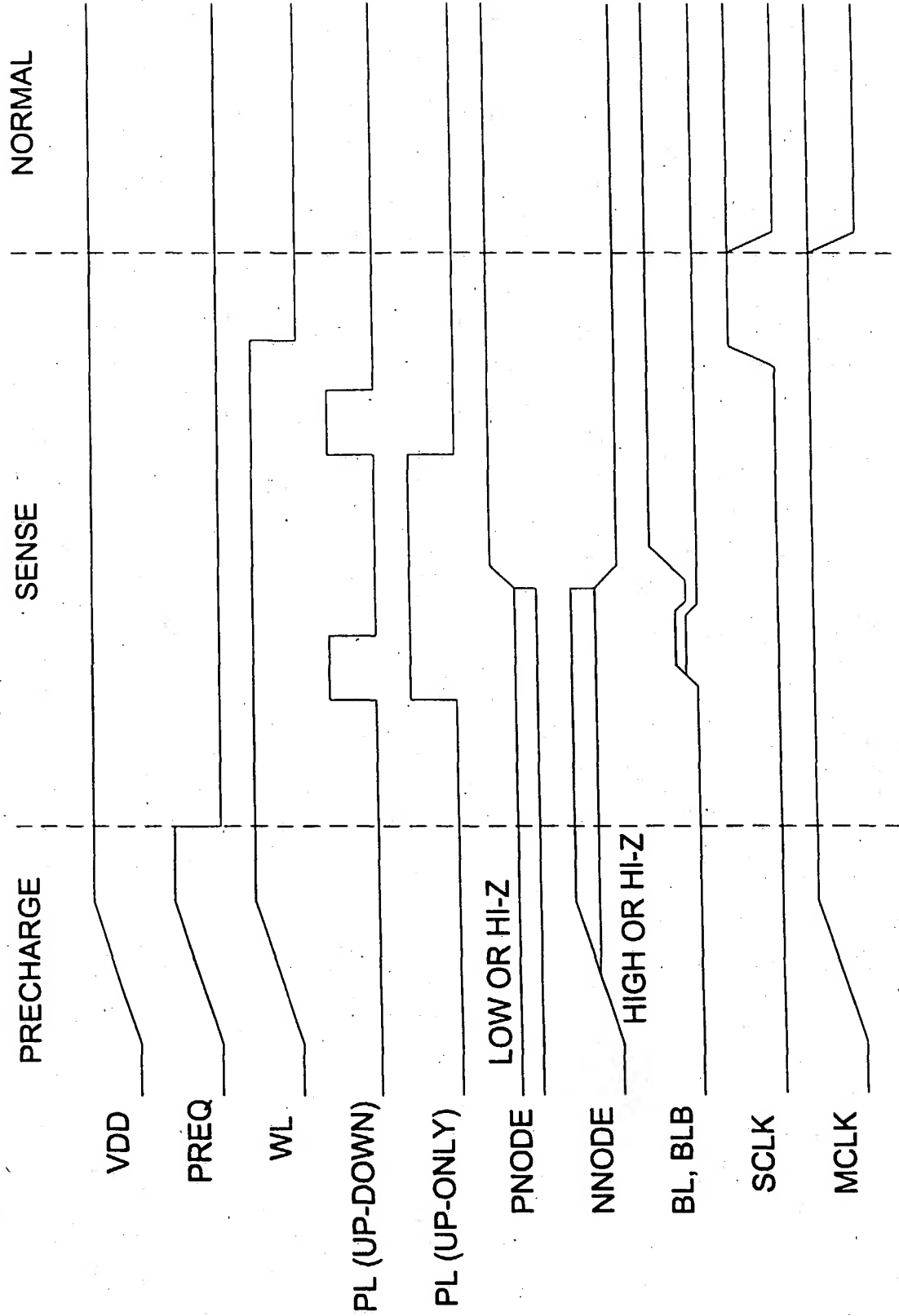


Fig. 34

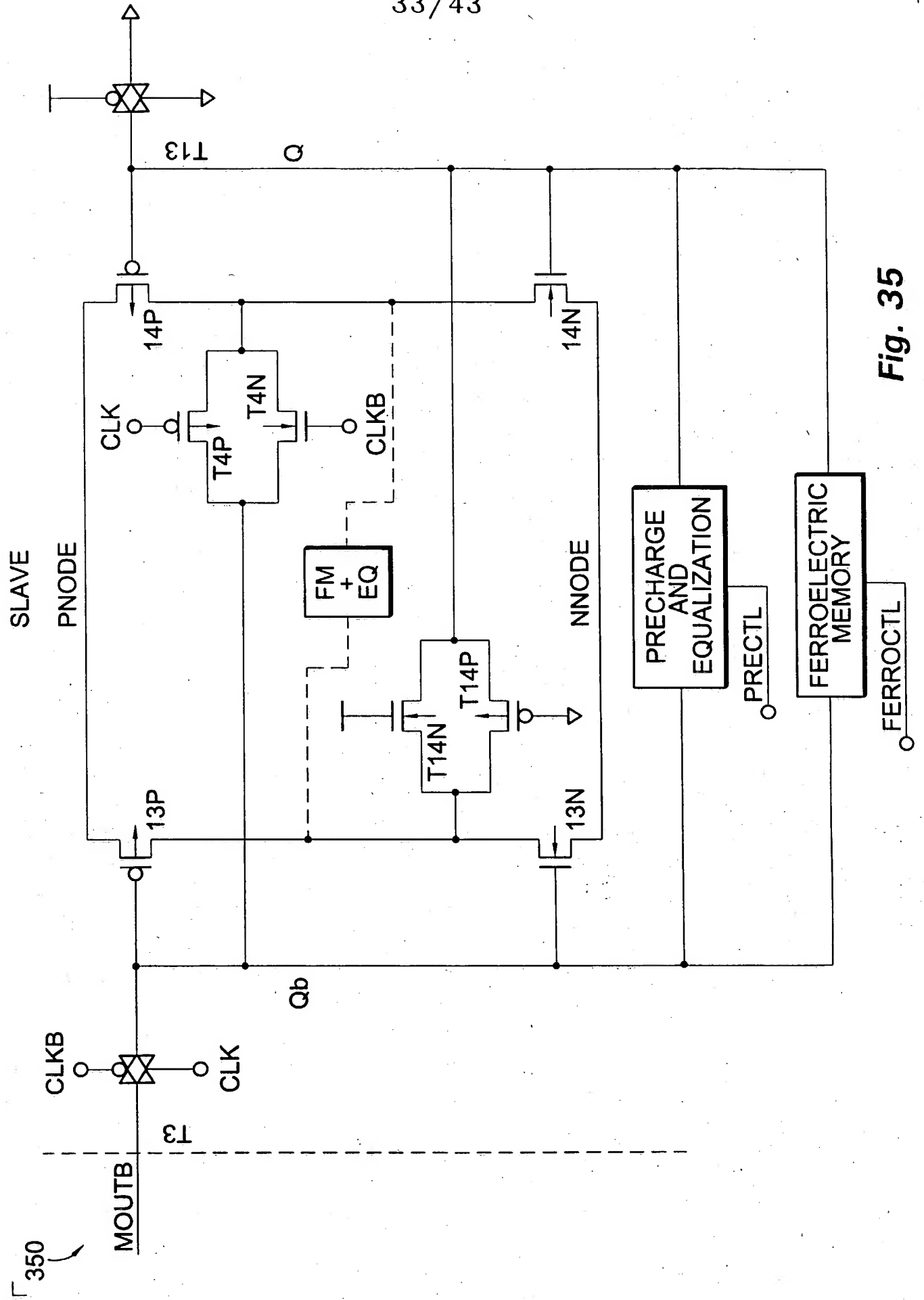


Fig. 35

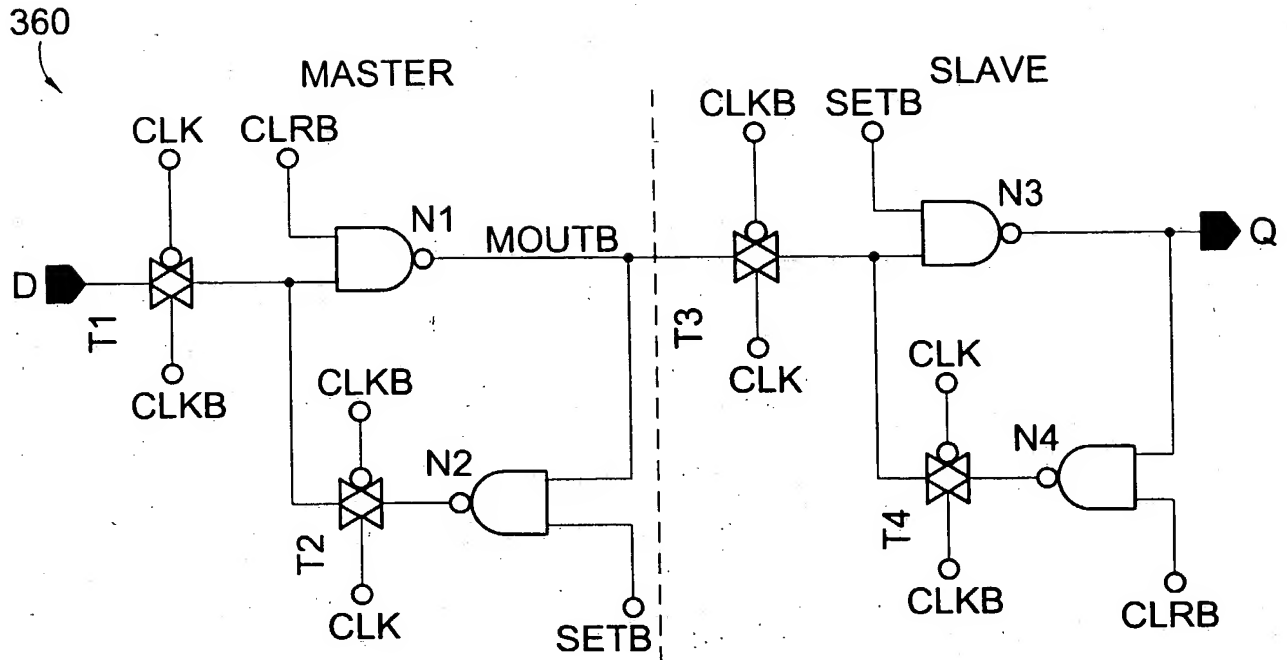


Fig. 36

370

CLK	SET B	CLR B	Q
X	0	0	1
X	0	1	1
X	1	0	0
X	1	1	QLAST
↑	1	1	D

Fig. 37

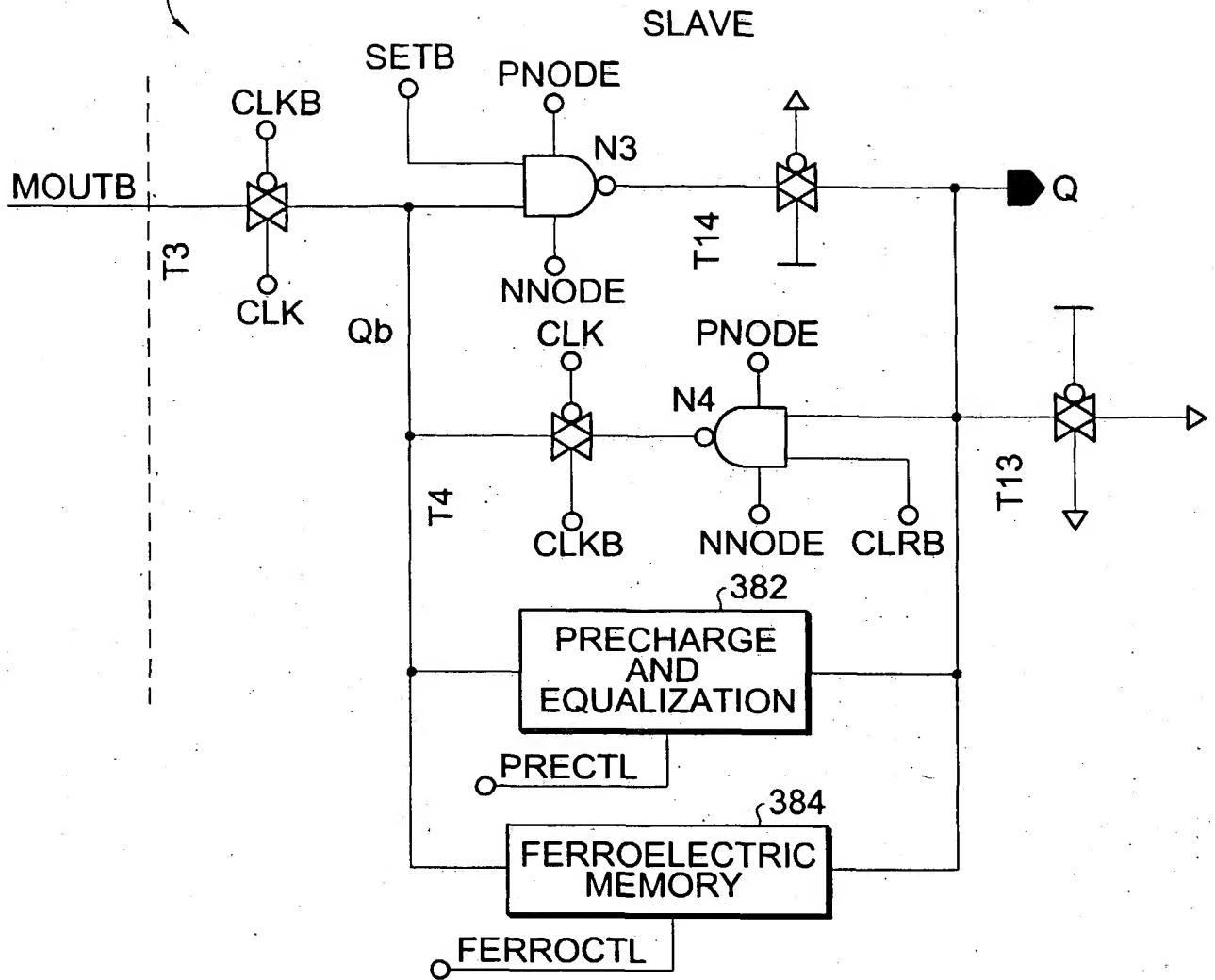


Fig. 38A

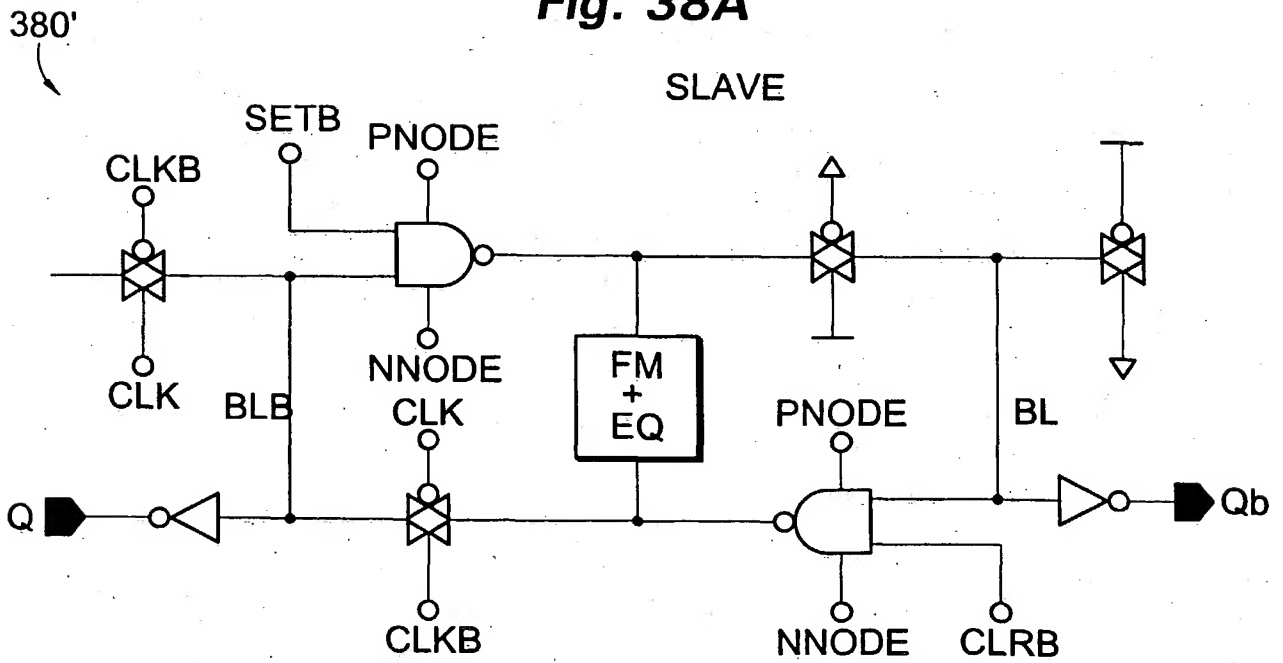


Fig. 38B

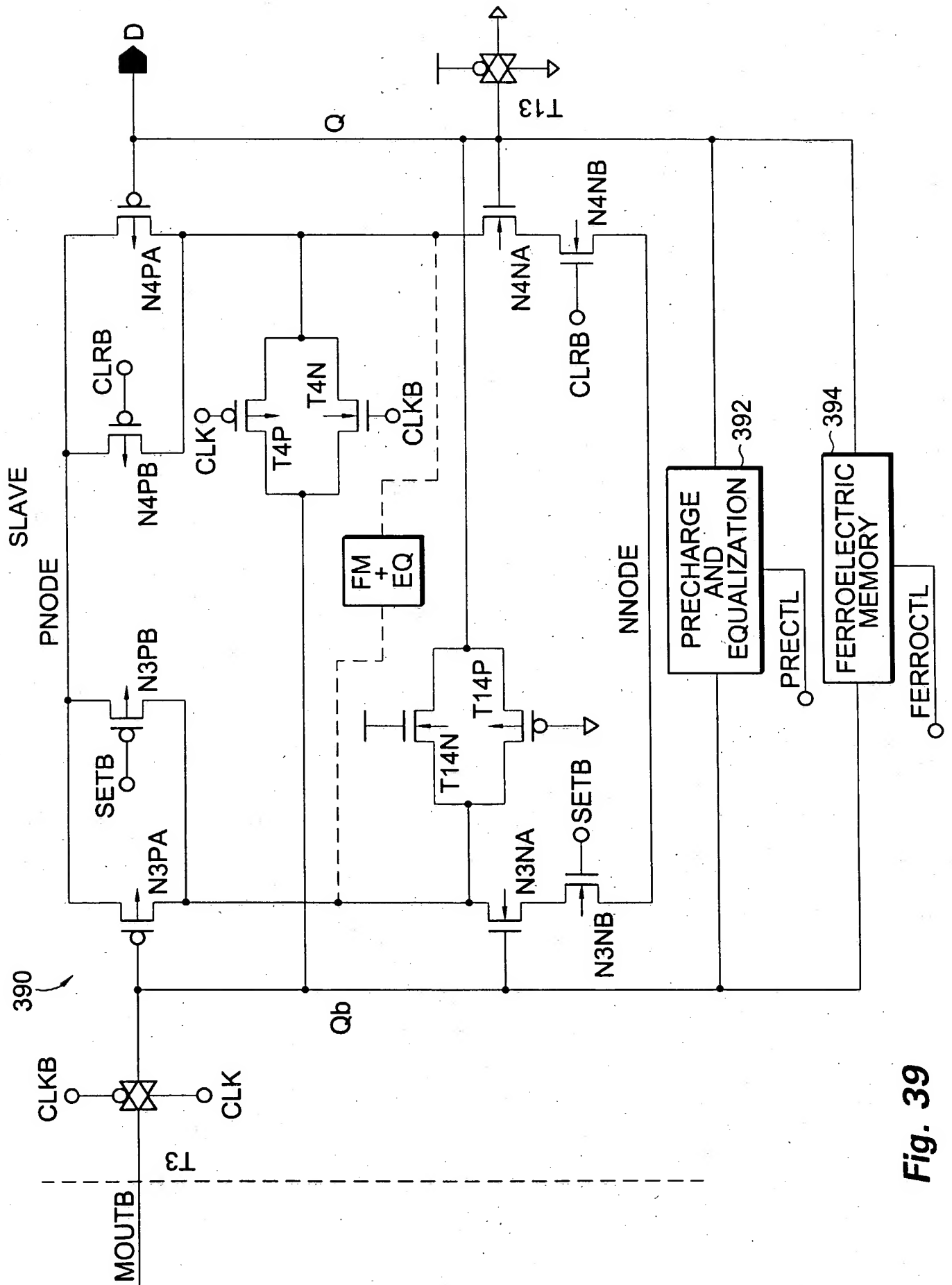


Fig. 39

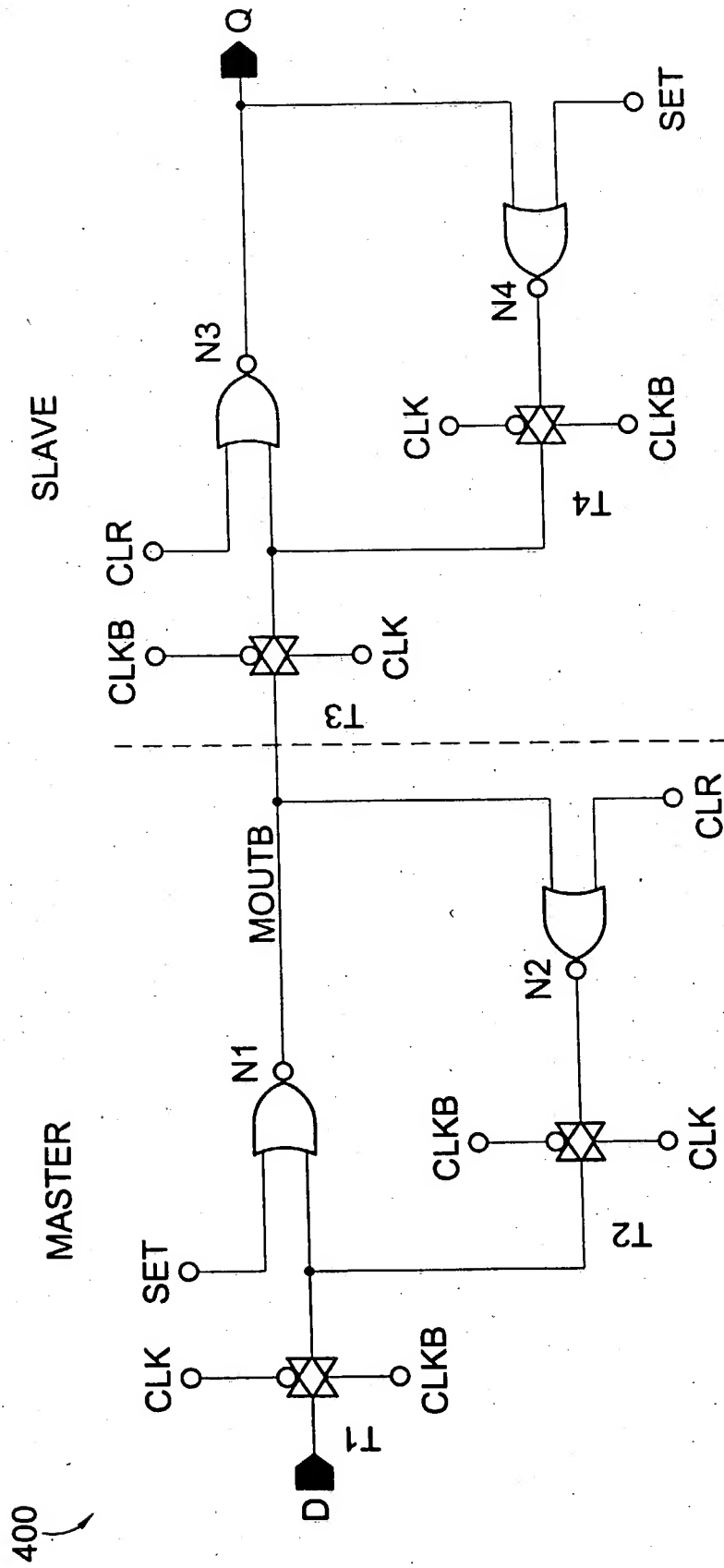


Fig. 40

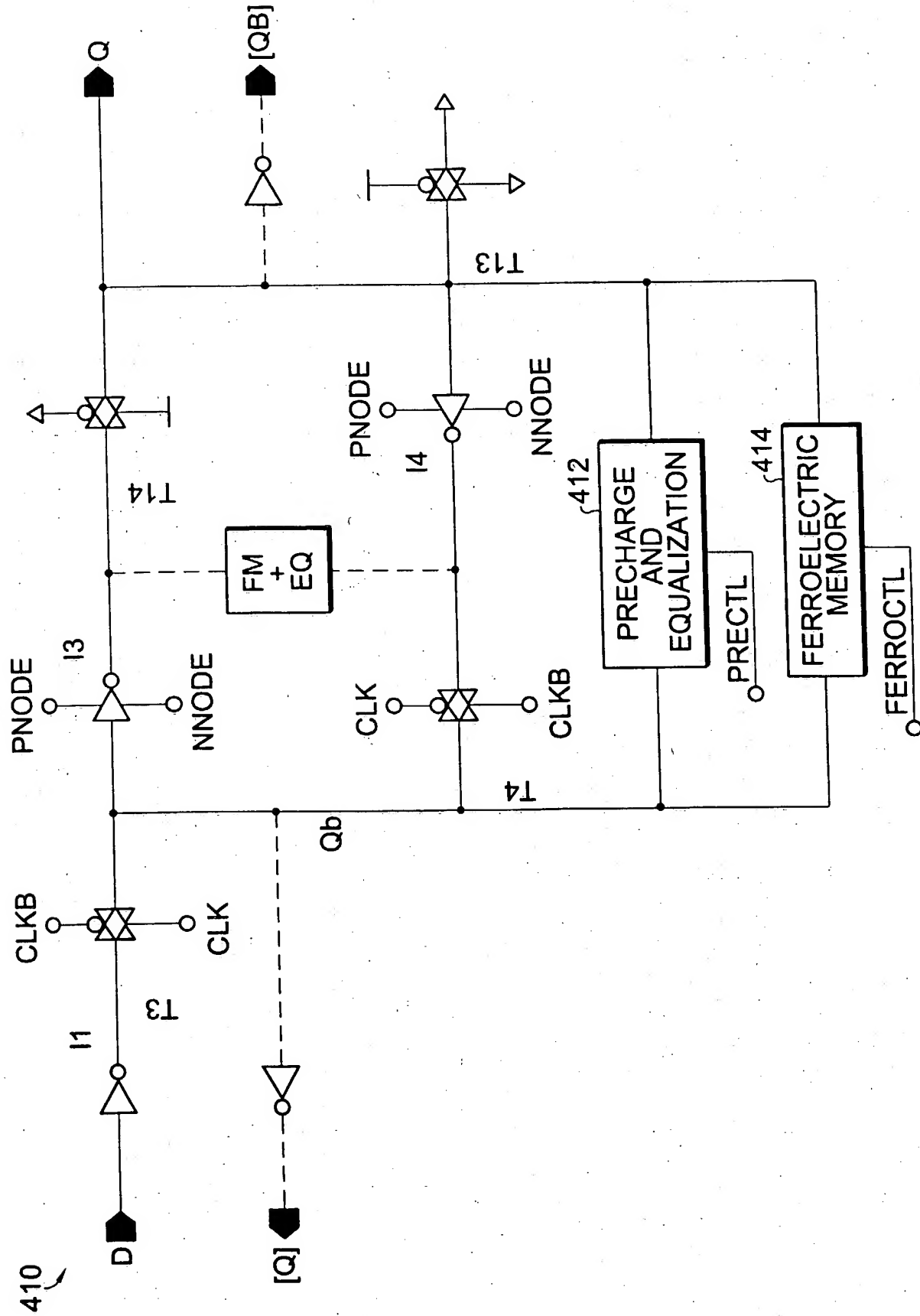


Fig. 41

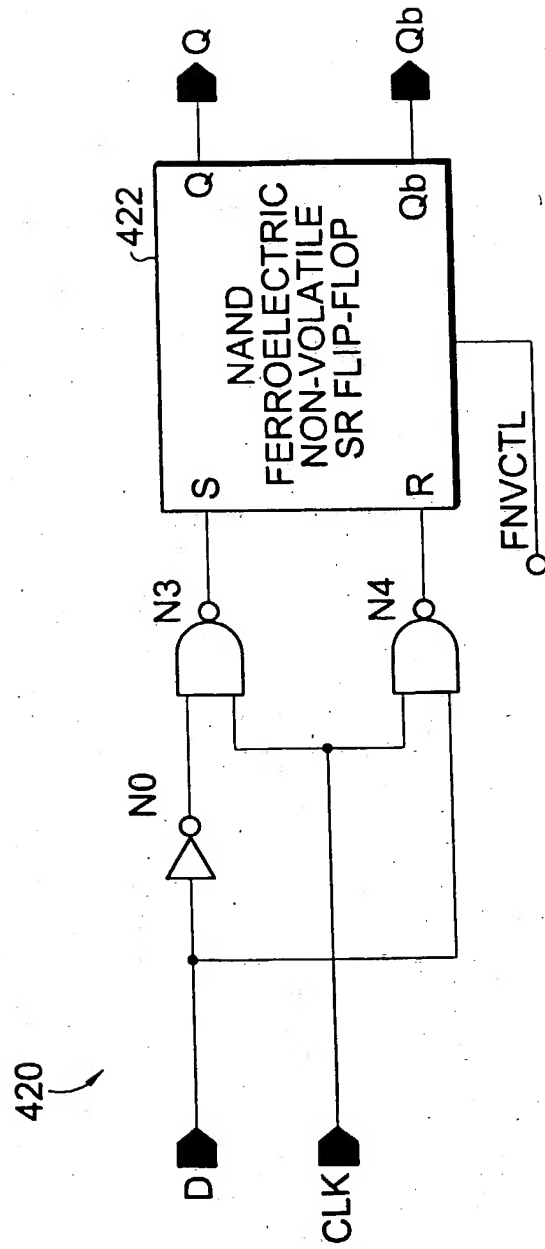


Fig. 42

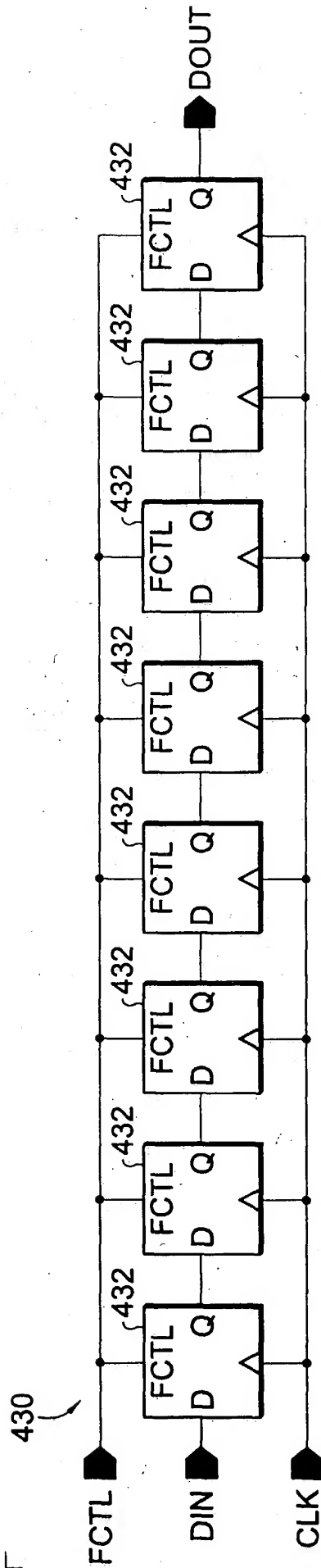


Fig. 43

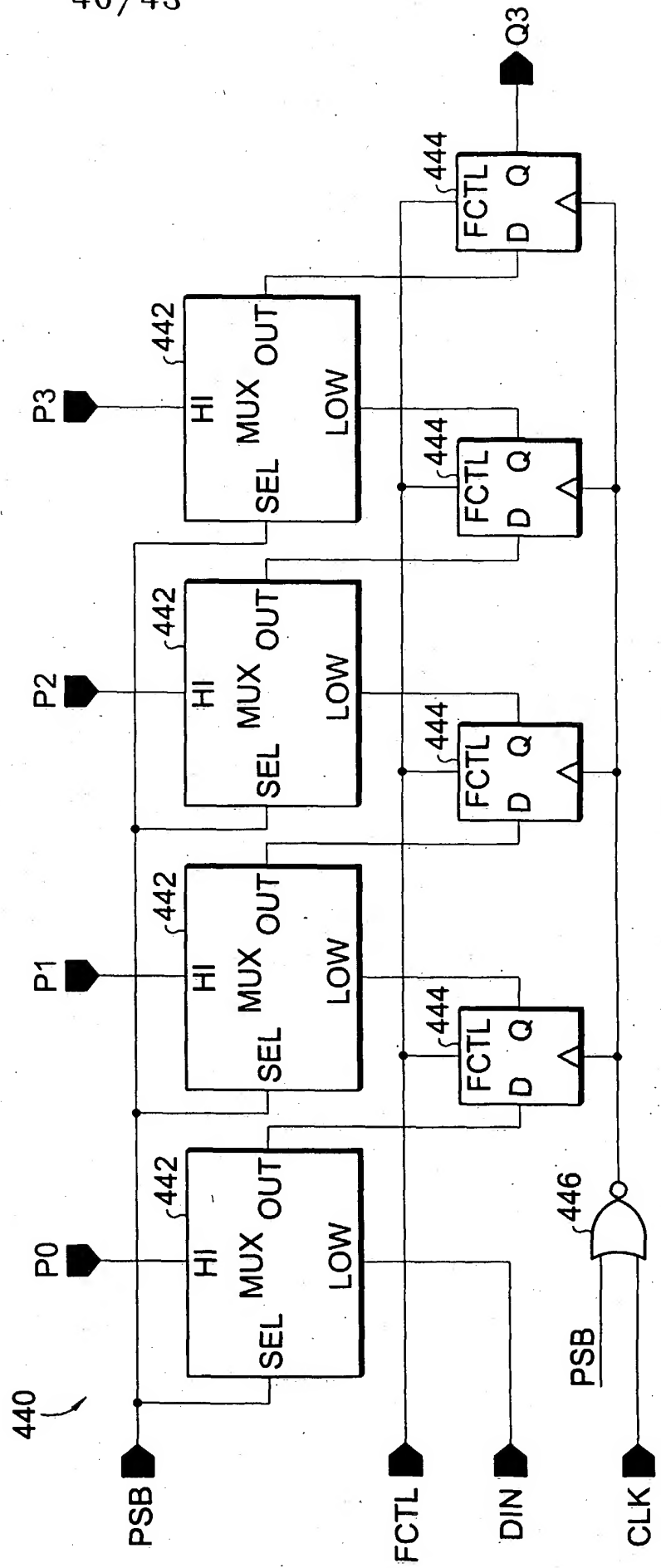


Fig. 44

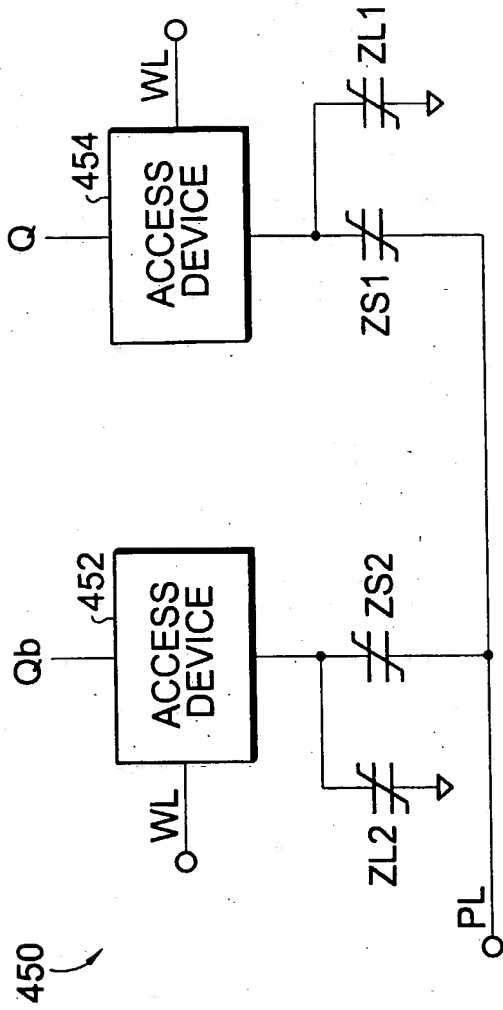


Fig. 45

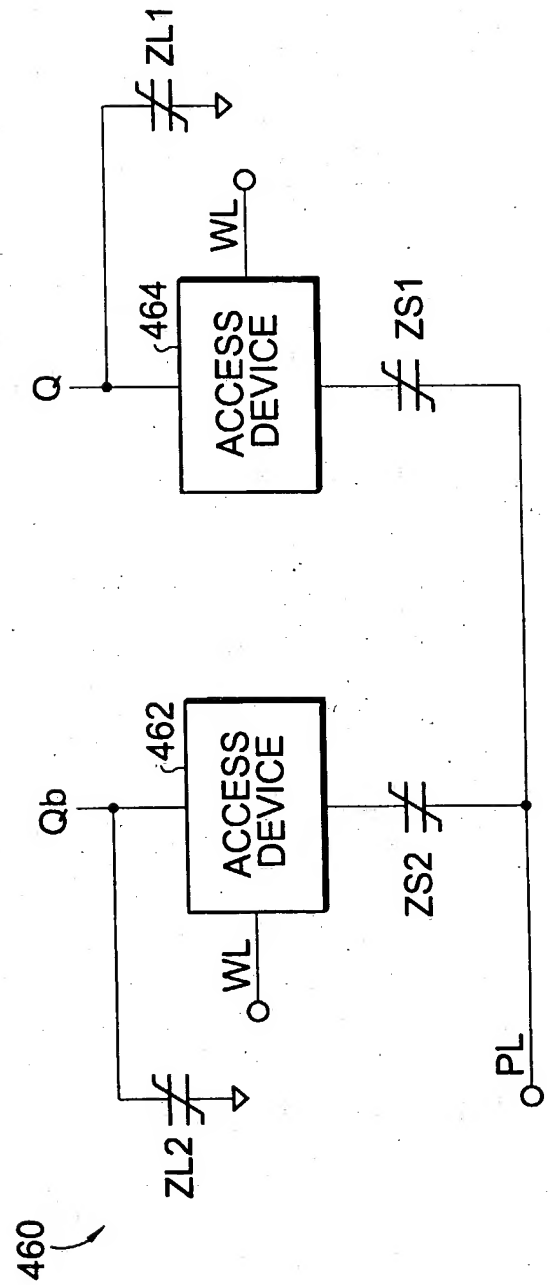


Fig. 46

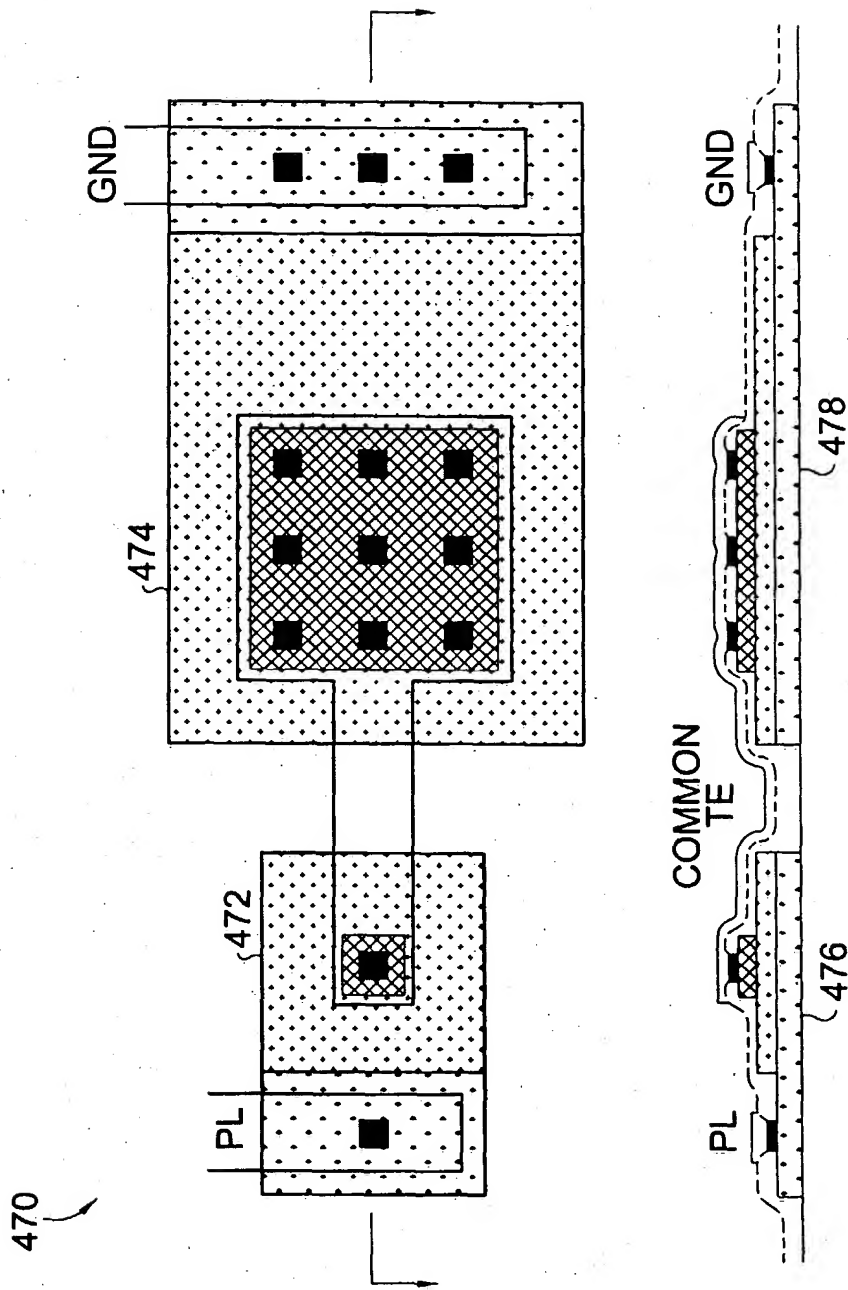


Fig. 47

- METAL
- CONTACT
- INTER-LAYER DIELECTRIC
- ▨ TOP ELECTRODE
- ▨ FERROELECTRIC
- BOTTOM ELECTRODE

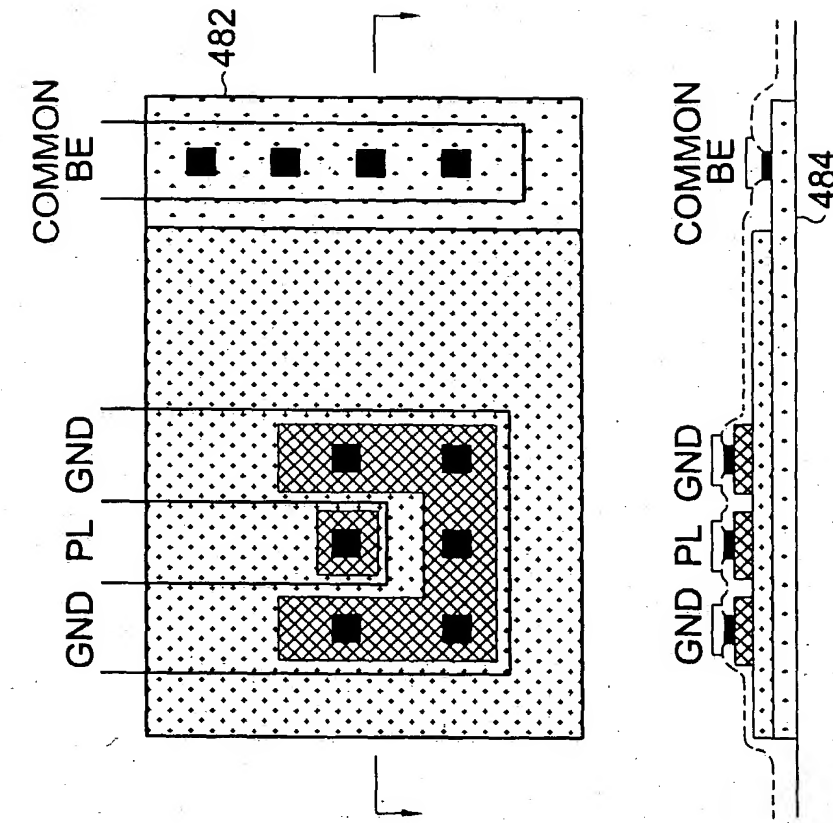


Fig. 48

- METAL
- CONTACT
- INTER-LAYER DIELECTRIC
- ▨ TOP ELECTRODE
- ▨ FERROELECTRIC
- ▨ BOTTOM ELECTRODE